Dr. R. S. Misra, Consultant and Head, Department of Skin, STD and Leprosy and Regional STD Teaching, Training and Research Centre, Safdarjang Hospital, New Delhi, is a well-known Dermato-Venerologist and Leprologist with wide experience of teaching and research in these fields. Besides more than hundred research papers in reputed national and international journals, Dr. Misra has to his credit a number of books on AIDS, Leprosy and Dermatology He has a keen interest in health education and has written innumerable popular science articles (both in Hindi & English) for creating and spreading awareness about health aspects among people. Going beyond the STDs and AIDS, Dr. Misra has stressed the need for educating the people in matters of human sexuality and psycho-sexual disorders in the present volume.

Sex
Sexually Transmitted Diseases
And AIDS

Sex
Sexually Transmitted Diseases
And AIDS

Dr. R. S. Misra, MD , D D.

VIGYAN PRASAR

Published by
VIGYAN PRASAR
C-24, Qutab Institutional Area
New Delhi 110 016
Phones 2696 7520, 2696 5978/5980/5985

Sex, Sexually Transmitted Diseases And AIDS
(A Publication under Vigyan Prasar Health Series)

Author
Dr. R. S. Misra

Series Editors
Dr. Narender K. Sehgal
Dr. (Mrs.) Divya Srivastava
Dr. Subodh Mahanti

Production and Layout
Ganesh A. Hegde
Ranjana Arora

Illustrations
Dr. D. Porichha

Cover Design
Shabnam/Amitabh

Keywords:
1. Sexually Transmitted Diseases-STD's – Sexual Behaviours
2. Genital Ulcers
3. Uro-genital Diseases
4. HIV (Human Immunodeficiency Virus)
   - AIDS (Acquired Immunodeficiency Sydrome)

ISBN 81-7480-013-1

© 1996 Vigyan Prasar

All rights reserved. No part of this book may be reproduced or utilized in any form, or by any means, electronic or mechanical including photocopying, recording, or by any information storage and retreival system without permission from publishers.

Responsibility for the information provided in this publication rests with the author.

Printed at Saurabh Print-O-Pack, A-16, Sector IV, NOIDA 201 301 (UP)

CONTENTS

Foreword : Narender K Sehgal 9

Preface : P.R. Dasgupta 11

Acknowledgements 13

Introduction 15

Chapter 1 · SEXUALLY TRANSMITTED DISEASES AN EVERGROWING PROBLEM 19
Historical background – Factors – Venereal diseases – Sexually transmitted diseases – Newer STDs – HIV and STDs – Knowledge and attitude towards sex as determinant of sexual behaviour – Control of STDs

Chapter 2 : ANATOMY AND PHYSIOLOGY OF SEX 30
Male sex organs – Female sex organs

Chapter 3 . GENITAL ULCER DISEASES 42
Ulcers – Syphilis – Chancroid – Donovanosis – Lymphogranuloma venereum – Herpes genitalis – Balanitis and vulvitis – Non-venereal genital ulcers

Chapter 4 : UROGENITAL DISCHARGES 61
Discharge from urinary passage in males – Discharge from the vagina – Discharge from the urinary passage in children – Complications – Care of patients with genital discharge

Chapter 5 : OTHER STDs 69
STDs of the ano-rectal region – Intestinal infections – Scabies – Ano-genital/venereal warts – Molluscum contagiosum – Pubic louse infestation

Chapter 6 : HIV DISEASE AND AIDS 81
Causative virus – Historical overview – The Indian secne – Modes of spread of HIV infection – Natural history of the disease – HIV and pregnancy – HIV infection in children – Antivirial therapy – Obstacles to prevention of HIV transmission – Control – Preventing HIV infection

Chapter 7 : SEXUAL PROBLEMS 99
Human Psychology and sex – Psychological factors on which successful sexual intercourse depends – Normal sexual functions – Stages in normal sexual response – Anatomy and physiology of intercourse in male – Psychosexual disorders in males – Psychosexual disorders in females – Psychosexual disorders secondary to STDs

Chapter 8 : PREVENTION OF SEXUALLY TRANSMITTED DISEASES (STDs) 117
Aims of STD control – Safe sex

Chapter 9 : LABORATORY DIAGNOSIS OF STDs 127
Direct microscopy without staining – Darkfield microscopy – Seriological tests for syphilis – Direct microscopy with staining

Appendix I . Treatment guidelines of some important sexually Transmitted Diseases 138

Appendix II . Glossary 142

List of illustrations and tables.....148

Index : 150

FOREWORD

This is one of a set of publications brought out by Vigyan Prasar in connection with the celebrations of the National Science Day (NSD) in 1995 for which the focal theme was "Science for Health". The idea originally was to quickly come out with several small books or booklets, on familiar health topics of everyday interest to the common people, written by well-known practicing doctors specialising in those areas. But since things did not happen 'quickly' enough to meet the NSD deadline, a decision was taken to reorient this effort and the concept of a "Vigyan Prasar Health Series" was born.

This volume titled "Sex, Sexually Transmitted Diseases and AIDS" by Dr R. S. Misra, Consultant and Head, Department of Skin, STD and Leprosy and Regional STD teaching, Training and Research Centre, Safdarjang Hospital, New Delhi, deals with those sexually transmitted diseases (STDs) which are not only quite widespread but their incidence is also on the rise in some segments of our population. AIDS, transmitted mostly through sexual contact, is one such case in point. Considering the prevailing ignorance and mis-information concerning matters of sex and sex-related problems, the author has done well to deal with these issues at some length. Based on his wide experience, he has compiled broad guidelines on prevention and treatment of STDs.

One hopes that readers, in particular those, who have seen or known someone close to them suffer from one of these ailments would be able to benefit through a better understanding of the underlying causes and an appreciation of the basic philosophy behind its medical care and control.

Suggestions not only in respect of this and other volumes in the series, but also on additional topics for inclusion, would be most welcome.

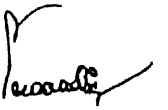
New Delhi

Narender K. Sehgal
Director
Vigyan Prasar

PREFACE

With the emergence of HIV/AIDS as a major problem in our country, attention has once again been focussed on Sexually Transmitted Diseases and the measures to control such diseases. It is an unfortunate fact that not enough attention was paid earlier to make the STD services easily available and accessible to those who require such services Such services also tended to get stigmatised.

In his book on "Sex, Sexually Transmitted Diseases and AIDS", Dr R.S. Misra has sought to demystify this subject and provide information which would prove to be extremely useful to the health-providers in an extremely lucid manner and one does not have to labour through the pages of this book I would expect that this book will be an important addition to the text-books written on this subject Dr. Misra has indeed done an excellent job.



(P.R. DASGUPTA)*

Addl. Secy. and Project Director
National AIDS Control Organisation
Government of India
Ministry of Health and Family Welfare
New Delhi-110001

* Currently Secretary,
Ministry of Human Resources Development
Government of India

Place. New Delhi
Date February 16, 1995

ACKNOWLEDGMENTS

I gratefully acknowledge the help of Dr. C.R. Samanta, MRCP (Psych), MRCP (Med), Consultant Psychitrist and my erst-while colleague in the hospital in the matter of preparation of manuscript of the chapter on Sexual Problems. A good amount of it has been drawn from the material prepared by him during the days of our running a psychosexual diseases clinic together My special thanks are due to Dr. D. Porichha, MD. Pathologist, Central Government Health Scheme, for drawing the conceptual drawings for the text. He has brought his artistic acumen to illustrating the description correctly and imaginatively. My thanks are also due to Prof. B.S.N. Reddy, Prof. & Head, Department of Dermato - Venereology, Maulana Azad Medical College & Associated LNJP Hospital, for providing the clinical photograph of LGV in a female patient.

I thank Dr V. Ramesh, Senior Dermatologist, and my colleague in the Department for preparing the manuscript of 'HIV Disease and AIDS' drawing from his experience on the subject during his WHO fellowship for International Clinical Training Course on AIDS conducted by the Infectious Diseases Society of America. The work expresses the collective wisdom of all my colleagues in the Department of Dermatology, Leprology & STD. They have not been mentioned by names, but all of them have helped me in various ways. I put on record my deep sense of appreciation to all of them.

I am thankful to Shri P.R. Dasgupta, the then Addl Secy. & Project Director, National AIDS Control Organisation, Govt. of India and (currently Secretary, Ministry of Human Resources Development) for acceding to my request to go through the manuscript and agree to write the Preface. His words in the Preface truly reflect the spirit behind the text.

I am thankful to Dr. Narender K. Sehgal, Director, Vigyan Prasar, and his able team, specially Dr. (Mrs.) Divya Srivastava,

who virtually coaxed me to complete the manuscript in the record period of forty-five days. I also thank Dr. Subodh Mahanti for seeing the text through the production stage. My thanks are also due to Mrs Geeta Sabharwal who always did this extra work of typing a neat and clean manuscript correctly, with a smile.

In the end, I put on record my affection and deep sense of gratitude to my wife, Dr. Nisha Misra and my sons Mrityunjaya and Vararuchi.

New Delhi
January 26, 1996

Dr. R. S. Misra, M.D., D.D.
Consultant,
Dermato-Venereologist
and Leprologist, and Head,
Department of Dermatology,
Leprology and Regional STD
Teaching and Research Centre
Safdarjung Hospital, New Delhi

INTRODUCTION

The present volume on 'Sex, Sexually Transmitted Diseases (STDs) and AIDS' is a result of experience gained by the author in explaining and discussing the subject with a large number of his patients coming to him not only with STDs, but more often with many other sexual problems for which they did not receive satisfactory explanation and management at various ends in spite of spending money and effort at their command. The matter being of a very personal nature and of utmost importance to them and in relationship with their sexual partners had many a time brought them to a catastrophic end It always did not need high degree of technical skill in diagnosis and management of their ailment. At times what needed the most was only a patient and sympathetic hearing and explaining to them the simple facts of human anatomy and physiology related to sexual matters.

My viewpoint was further strengthened during my long years of teaching various levels of medical personnel, viz , post-graduates in the field of Skin and STD, Medical Officers, various categories of paramedical workers, e g., nurses, laboratory technicians, medical social-workers, voluntary health workers, etc. My association as Director for the STD Training Programmes run by the Regional STD Teaching, Training & Research Centre made me acutely aware of the need for a suitable teaching material, which was not available. The introduction of AIDS in the curriculum in early nineties and its transparent relationship with STDs further aggravated this need. Further the medical personnel attending the four to seven days short-term training programmes were in dire need of a suitable teaching material which they could assimilate easily and carry with them as an useful guide for further use in their practice.

The subject has been dealt with keeping the manifold needs of various groups and encapsulating them to the best of my capability. In this respect the present work is different from the existing text-

books and other reading material available on the subject. My main effort has been to present the subject in the Indian or broadly in the Asiatic context and underline the problems faced by the people in this region. The subject of STDs has itself undergone a phenomenal change from its early days to the present age in its content as well as management. The introduction of antibiotics in early forties brought a sea-change in the management of STDs. The long-term disabling and debilitating effects of diseases like syphilis, gonorrhoea, LGV and donovanosis were over, in spite of their persisting all the same in abundant measure. To them were added many other parasitic, bacterial and virus disorders, e.g., ano-genital disorders, Pelvic Inflammatory Disease, Non-gonococcal Urethritis, a host of viral diseases and finally HIV producing AIDS. Many of them continue to pose management problems even now.

The anatomy and physiology of sexual organs have been described in some detail to make people learn what they feel shy to ask others. In line with WHO management guidelines STDs have been discussed under headings of Genital Ulcer Diseases and Urogenital Discharges. The subject of HIV and AIDS has been dealt with in some detail in view of its increasing importance in the matter of causing untold miseries to the sufferer and his/her family.

In no other group of human diseases prevention is as important as in case of STDs. Here more often than not the individual is aware that he may contract the disease during the moment of pleasure. Then why not prepare yourself in advance and take necessary preventive measures in time before the disease gets into advanced stage? The Chapter on Prevention of STDs provides details of various control measures and more importantly what the individual can do at one's own level.

Sexual problems, unrelated to STDs have been dealt with in greater detail so that people get a clearer perspective of their problem and develop confidence in dealing with them effectively of their own. The chapter on Laboratory Diagnosis of STDs is meant for medical and laboratory personnel working at PHC level in order

to equip them with necessary expertise and knowledge to set-up the simple and basic diagnostic facilities independently. In the appendix is provided information on broad treatment guidelines of some important STDs. Some pharmaceutical trade names have been mentioned, but they are certainly not all inclusive. They are only to help locate some useful drugs and give an idea of their costs. But in quick changing price situation, that may not always be accurate. Some technical terms used repetitively in the text have been explained in the glossary.

The book would achieve its objective to a great extent, if it helps the young people develop a positive and healthy attitude in sexual practices and make them lead enjoyable life free of STDs · The medical and paramedical personnel will find a completely new approach to the subject much different from the existing text books in this volume, with which they will be able to provide better treatment to their patients.

There has been delay in the publication of the book due to some unavoidable reasons, but the statistical data and other information as indicated in the text have been updated till January 1996 The author welcomes suggestions and comments to improve the contents in future.

CHAPTER 1

SEXUALLY TRANSMITTED DISEASES : AN EVER GROWING PROBLEM

Historical Background

Sexually transmitted diseases (STDs) have a long history as per records and accounts in ancient medical and other texts While the descriptions in these very old texts are vague, it is pertinent to point out that their transmission through non-marital sex and other modes was clear even to the ancients The Sanskrit texts attributed these to clandestine sexual contacts Though descriptions of various STDs are found in old Chinese, Egyptian and Biblical texts, syphilis first finds mention in the Indian context as late as the 16th century in medical text *Bhava Prakasha* wherein it is referred to as *feranga roga* -- disease of the white man

In the pre-antibiotic era these diseases devastated the health of the infected persons and were eventually fatal Among the dreaded STDs were syphilitic heart diseases, neurosyphilis with severe spinal affectation and mental deterioration, leading to the stage of insanity, strictures in the urinary passage due to gonorrhea in the male, causing severe pain every time the person urinated and high infant mortality and infertility in the female partners.

The advent of penicillin in the early forties and the subsequent development of other effective broad spectrum antibiotics changed the face of bacterial STDs for the first time Syphilis and gonorrhea became curable The late complications of these diseases are not seen frequently now. However, in spite of the availability of effective cures for many of these diseases, their incidence did not fall even in most of the developed world due to complacency The management of the STDs does not end with the symptomatic treatment of patients -- it also entails the

management of their sexual contacts and the dissemination of sex and health education with regard to these diseases in the community This aspect has by and large been neglected, in most places which have not met with success in effectively combating these diseases.

Factors

The STDs unlike many other microbial organic diseases such as pneumonia, typhoid, TB, etc., are medico-social disorders. The explanation for the increase in the STDs is multifatorial :

1 The age of sexual maturity has decreased.

2 The age at which young people have intercourse has declined.

3. More and more people indulge in sexual intercourse before marriage.

4. Due to the advent of oral contraceptive pills and intrauterine devices (IUDs) and the resultant loss of the fear of pregnancy in female sexual partners, the protective effective physical barrier, i.e., condom has become less popular This has made the unprotected genitals more vulnerable to STD microbes.

5 The burgeoning metropolises are attracting more and more people in search of job opportunities and economic betterment. The anonymity of the city life emboldens them to experiment sexually, with its attendant risks

6 Certain groups, like tourists, professional travellers on business and pleasure trips, members of the armed forces, immigrants, etc , are more vulnerable to sexual contacts outside established marital relationships

7. Certain STD microbes, like gonorrhoea, chancroid, donovanosis, etc., have developed drug resistance.

8 New viral diseases, like warts and herpes virus. Latest of them to have appeared on the scene is HIV leading to AIDS

9. Resources needed to deal with the increasing incidence of STDs both in terms of good treatment facilities and coordinated control measures, are inadequate

Venereal Diseases (VD)

These diseases were known as 'venereal diseases' or VD till two decades ago VD included only five diseases, viz , syphilis, gonorrhoea, chancroid, donovanosis and lymphogranuloma *venereum* The Hindi terminology used by the common man was *'garmi ki bimari'*, perhaps hinting at disease following a sexual encounter. The term 'venereal' derived its origin from the word 'Venus' - the Greek goddess of love, erroneously suggesting that these diseases were caused by making love or indulging in any kind of sex, which was not always true The Hindi translation *'ratija roga'* or *'kama-pareshita'* sought to convey the same idea Rati is wife of Kamadeva, the god of love

Sexually Transmitted Diseases (STD)

During the seventies the World Health Organisation decided to change the misleading nomenclature of this group of diseases and suggested a new term 'sexually transmitted diseases' (STDs) in an attempt to make the cause of these diseases explicit to its sufferers Thus, the mode of transmission was made amply clear--an individual carrying the infection passed it on to his healthy sexual partner during sexual intercourse Many new diseases were added to this group by then, which were besides bacterial, of viral, protozoal, fungal or parasitic origin -- increasing their number to about twenty-five The previous five became known as classical STDs and others as minor STDs

GUM

Around the same time British venereologists decided to change the name of their specialty to Genito-urinary Medicine (GUM) This not only enhanced their status amongst the medical fraternity.

but also made the specialty of venereology medicine oriented, in contrast to being seen as an offshoot of surgery.

The advent of AIDS in 1981 changed the face of STDs completely. From their being considered as diseases of lesser consequence, because of low mortality, there was new recognition that the disease caused by HIV had a multi-organ impact and could prove fatal in a short period of time Moreover, in its asymptomatic phase, the virus was capable of infecting a large number of healthy sexual contacts, blood recipients, and needle-sharing drug addicts, besides spreading to the healthy community in other hazardous ways.

Newer STDs

A large number of organisms are responsible for the production of a variety of signs and symptoms of STDs (Table 1) Our understanding of micro-organisms and developments in the field of biological sciences have increased the number of

Table 1

Sexually transmitted pathogens producing various clinical manifestations

	Pathogens	Clinical manifestation
A.	**Bacterial agents**	
1	Treponema pallidum	- Syphilis - TORCHES syndrome - Proctitis in homosexual men
2	Neisseria gonorrhoeae	- Urethritis in men Disseminated gonococcal infection, Epididymitis Vaginal discharge

		Cervicitis Pelvic Inflammatory Disease (PID) Proctitis in homosexual men Conjunctivitis in new born
3.	Haemophilus ducreyi	- Chancroid
4.	Chlamydia Trachomatis Serovar L1, L2, L3 Serovar D to K	- LGV - Non-gonococcal Urithritis (NGU) Cervicitis Vaginal discharge PID Procititis Epididymitis Acute Arthritis with genital infection Infant pneumonia Neonatal conjunctivitis
5	Calymmatobacterium granulomatis	- Donovanosis
6	Mycoplasma hominis	- Vaginal discharge PID
7	Ureaplasma urealyticum	- Urethritis in men - Vaginal discharge
8	Shigella spp	- Proctocolitis in homosexual men
9.	Campylobacter spp.	- Proctocolitis in homosexual men
10.	Group B Streptococcus	- Neonatal sepsis
11	Bacterial vaginosis associated organisms	- Vaginal discharge

B. **Viral agents**

1.	HIV virus	- AIDS
2.	Human papilloma virus	- Genital and anal warts
3	Molluscum contagiosum virus	- Molluscum contagiosum
4.	Human (α) herpesvirus 1 or 2 (herpes simplex virus)	- Cervicitis Genital ulceration Proctitis in homosexual men TORCHES syndrome
5	Human (β) herpesvirus 5 (formerly cytomegalo	- TORCHES syndrome Hepatitis virus
6.	Hepatitis virus B	- Hepatitis

C **Protozoal agents**

1.	Trichomonas vaginalis	- Vaginitis
2.	Entamoeba histolytica	- Proctocolitis in homosexual men
3.	Giardia lamlia	- Enteritis in homosexual men

D. **Fungal agents**

1.	Candida albicans	- Vaginitis

E. **Ectoparasites**

1	Sarcoptes scabiei	- Scabies
2.	Phthirus pubis	- Pediculosis pubis

organisms that have been identified Many new bacterial disorders, like non-gonococcal urethritis, the proper identification and classification of the organisms of the previously known disorder, like lympho-granuloma venereum (LGV), have enhanced our understanding of these diseases and their proper management Due to anal-penile and penile-oral sex, many bacterial diseases which are mainly gastro-intestinal can also be transmitted by these aberrant sexual behaviours. Important in this group are infections like amoebiasis and diarrhoea caused by shigella and salmonella bacteria, respectively Candida and protozoal infections like trichomoniasis can be causes of balanitis and vaginal discharge; ectoparasites producing diseases like scabies and pubic lice infections can be contracted sexually besides their spread through non-sexual close physical contacts. Viral diseases like *Herpes genitalis*, wart viruses, and viruses causing hepatitis may also spread by sexual contact The human immunodeficiency virus, though of recent origin poses a big threat to the survival of the human race particularly in the underdeveloped countries of Africa and Asia.

Due to the non-availability of effective curative treatment the incidence of STDs soared in the pre-antibiotic era before 1940s. With the availability of penicillin and other broad spectrum antibiotics, the situation improved dramatically. However, the sharp fall in the incidence of these diseases was followed by a second peak in the 1970s. The experience of the two developed countries, viz , UK and USA, had been distinctly at variance in this regard After antibiotics became available, USA closed down its STD clinics and handed over the problem of STDs to its public health authorities. This resulted in an increased incidence of bacterial diseases like syphilis and gonorrhoea. UK on the other hand by not closing down its VD clinics and by persisting with effective contact tracing and its health education campaign was able to keep the STDs under control As a result it could quickly contain the menace of HIV and AIDS as well. The experience of developing countries in this sphere had been unrewarding because of the scarcity of resources for medical

care. Their preoccupation with other killer diseases has not left much for these socio-medical problems. The diagnosis of these diseases was never foolproof, no clear epidemiological picture of various disease profiles was available due to incomplete case-reporting and non-existent contact tracing and bringing them under treatment. With the result that STDs continue to remain the proverbial tip of the ice-berg, (Fig 1). In the absence of any reliable statistics the problem of STDs should be considered the problem of all the sexually active age-group population. In other words in India it should be considered as a problem of at least one-third of the population, i.e., 300 million people, and the strategies to counter them should be accordingly suitably devised.

HIV and STDs

The need to combat STDs has assumed greater urgency in the context of spread of AIDS. Many studies have shown that the factors responsible for the spread of HIV and STDs are similar. In addition, STDs act as a co-factor in the spread of HIV. Ulcerative as well as non-ulcerative STDs have contributed to the increased susceptibility to HIV infection and development of AIDS. The absence of lesions on the genitalia in HIV infection made even scientists debate whether HIV can be considered a STD The statistics collected so far from various sources, i.e , female sex workers and other high risk groups, have strongly established that HIV is mainly transmitted by the sexual routes; thus it is like any other STD, a sexually transmitted disease, but without the symptom of any genital lesions Non-sexual routes, like contaminated blood, needle sharing in cases of drug addicts and mother to new born transmission are equally well seen in another important sexually transmitted disease, syphilis.

Knowledge and attitude towards sex as a determinant of sexual behaviour

Human attitude concerning sexual activities are at the centre

Fig. 1: Reported STDs are like a tip of an iceberg over the water surface

of a wide range of human sexual behaviour Further various activities within the range of sexual behaviour determine the probability or otherwise of contracting a STD. Complete abstinence from any sexual contact can only guarantee that sexually active people will not suffer from STDs Even faithful, monogamous relationships can expose the couple to the risk of several diseases due to practice of oral-genital, genito-anal, oral-anal sex and the manipulation of the anus and genital by hand/ finger, during sexual foreplay Multiple partner involvement, homosexuality, lesbianism, etc , further worsen the situation and can open the flood gates of STDs.

It has clearly been demonstrated that human behaviour and STDs are closely interconnected. Two primary factors responsible for human sexual behaviour are (a) sexual satisfaction or sexual needs of the individual, and (b) the shame involved in being identified as one indulging in socially aberrant sexual behaviour or having contracted STD.

Control of STDs

The question bothering social scientists and psychologists is : Why do people quickly set aside their knowledge and training when it comes to having sex and exposing themselves to the hazards of STDs?

STDs are among the most common causes of illness in the world. In developing countries STDs rank among the top five diseases for which health care services are sought and which are responsible for widespread morbidity in the population The spread of HIV infection and AIDS has highlighted the importance of effective control measures for STDs, as those countries with efficient control programmes for STDs like UK have found it easier to control the HIV-AIDS epidemic

Early diagnosis and treatment are cheap Late complications of untreated STD are expensive and difficult to manage. Primary prevention aims at (a) educating individuals about the advantages of discriminate and safe sex, and (b) adopting pre-emptive measures against the disease.

The following measures can reduce the risk of contracting STDs :

- Abstinence . avoid sexual intercourse.
- Avoid prostitutes, casual sex, multiple sex partners and people with multiple sex partners
- Avoid sexual contact with people having lesions on the genitalia, e.g., sores, discharge per urethra, warts, herpes
- Use condoms.
- Regular check-up for people with multiple sex partners
- A single faithful marital partner is an effective way of avoiding STDs

In case of indiscriminate sexual exposure :

- Respond to disease suspicion by promptly seeking medical advice.
- Take oral/injectable medication as directed by the clinician.
- Return for follow-up and tests as required by your doctor.
- Help in bringing your sexual partner for examination and treatment if called for

* * *

CHAPTER 2

ANATOMY AND PHYSIOLOGY OF SEX

The sex organs not only make the sexual act possible but are ultimately responsible for propagating the human race and are therefore also called (the external sex organs). These organs also enable the passage of urine therefore, they are collectively called *urogenital organs*. In male there is a common passage for urine and semen, called the urethra which at different times passes urine and semen independently but never both together. In female, the urinary passage is separate

Male sex organs

Penis : In the flaccid position it is 5-7 cm long The body or shaft of the penis is formed by a fused pair of corpora cavernosa, two masses of erectile tissue, which lie dorsally and get injected with blood during erection Beneath the two fused corpora cavernosa lies another erectile column of muscle, corpora spongiosum, which surrounds the urethra in its course along the lower surface of the penis, its terminal part enlarges to form the front portion, glans penis In the erectile position the length of the penis can be 15-20 cm (Fig 2). The glans is covered by the foreskin, called prepuce, which in certain communities like Muslims and Jews is excised as a ritual. The glans is smooth surfaced and helps in the penetration of the penis into the vagina

At the root of the penis the corpora cavernosa diverge to get firmly attached to the pelvic bones. Two surrounding muscle masses help in rhythmic contractions during orgasm and semi-voluntarily during erection

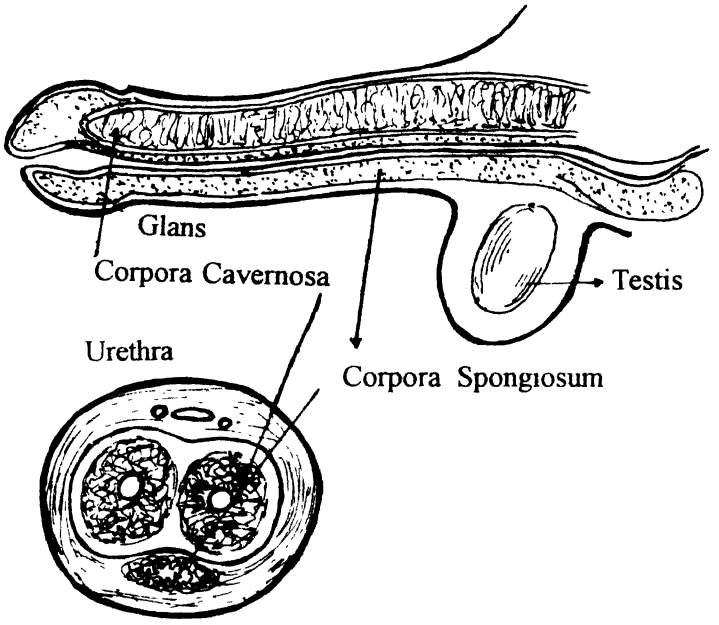


Fig. 2: Cut and longitudinal section of penis

Urethra (Urinary Passage) : A long passage - divided into two parts - one inside the penis, anterior urethra, measuring 15 cm and the other beyond the root of penis, called posterior urethra (Fig 3) Into the anterior urethra drain the secretions of the Cowper's and Littre's glands. Paraurethral ducts channel through the glans penis for a short distance on either side of the urinary opening at the tip. The posterior urethra is divided into the membranous and prostatic urethra. The membranous urethra is 1-2 cm long and surrounded by compressor urethra muscle. The prostatic urethra is 3 cm long The prostatic gland secretions, through many tiny openings and secretions of semen through common ejaculatory duct drain into it.

Prostate Gland : A firm conical structure, its base is close to the neck of the urinary bladder. The prostrate gland has a

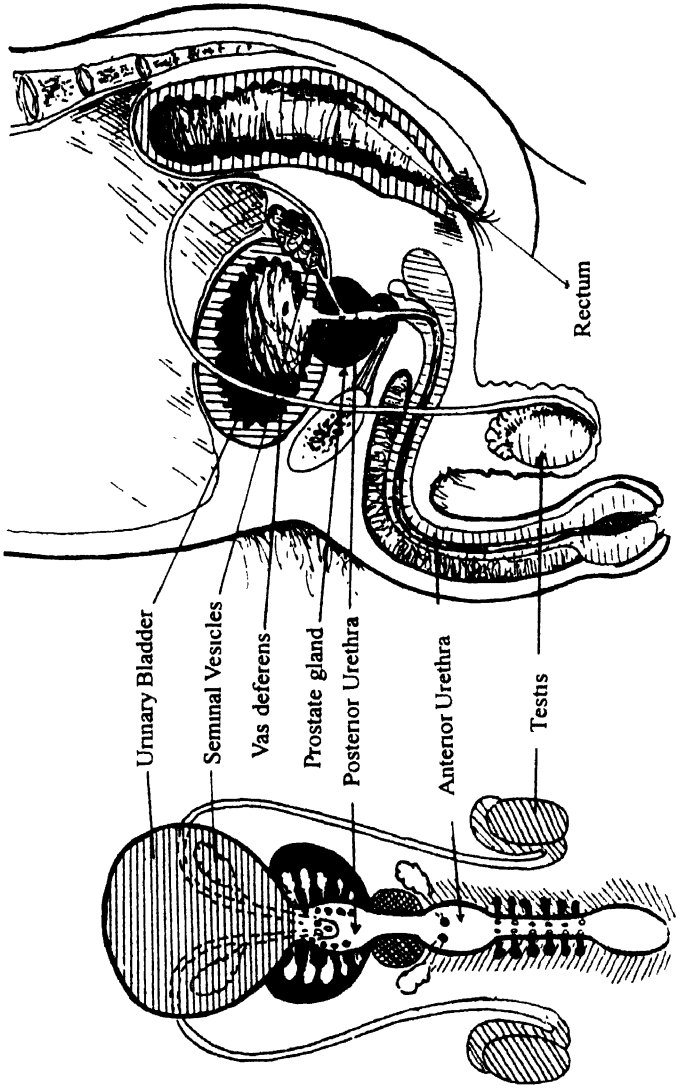


Fig. 3: Male sexual organs

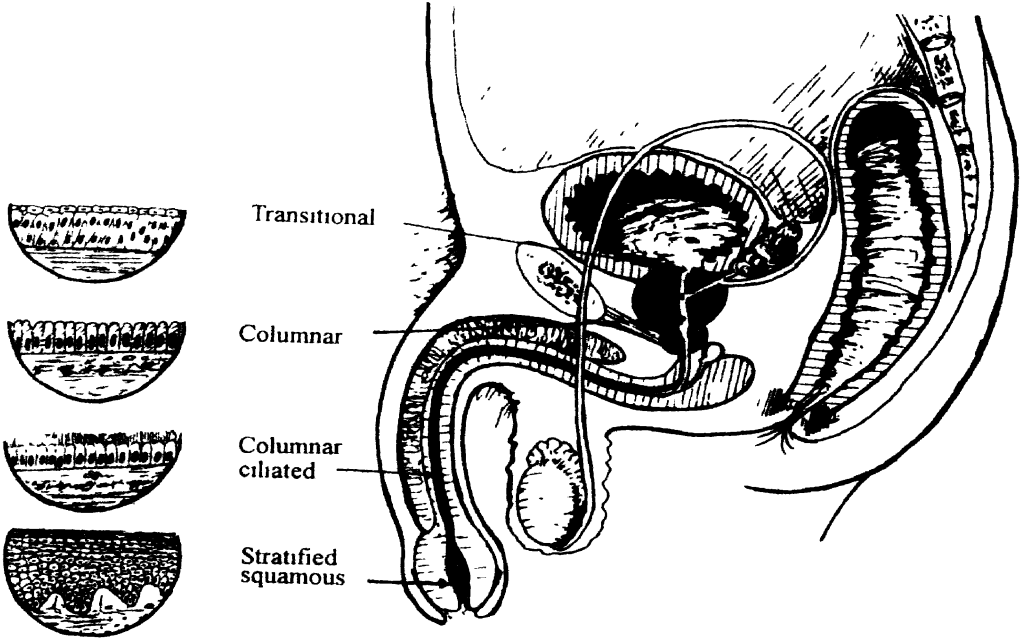


Fig. 4: Epithetial surfaces of genito-urinary system

middle and two lateral lobes. Its glandular tissue is lined with columnar epithelium.

Seminal Vesicles : The two convoluted pouches, each approximately 5 cm in length, store seminal fluid. They lie between the base of the bladder and the rectum. Each vesicle at its lower end joins with the corresponding vas deferens to form the common ejaculatory duct. They are lined with columnar epithelium.

Testes and Epididymes : Testes lie in a superficial pouch of skin and muscle, the scrotum. Within the scrotum the level of the testes is controlled by two muscles : the dartos which can corrugate and shrink the scrotal skin and cremaster muscle which forms a sling encircling the testes and spermatic cord within the scrotum The testes contain two principal types of cells . the interstitial (Leydug) cells which produce steroid hormone, principally testosterone, and the tubular cells from which spermatozoa are derived. The sperms pass from the seminal tubules into the long convoluted tubules which forms the epididymis over the testes. The epididymis consist of a head, body and tail and lies along the lateral part of the posterior aspect of the testes. The epididymis are lined with ciliated columnar epithelium (Fig 4)

The blood supply of sex organs

The internal pudendal artery, which is one to the two terminal branches of the anterior trunk of the internal iliac artery gives off a large calibre but short branch to the bulbs of the corpus spongiosum. The main artery then divides into the deep artery of the penis, which runs through the corpus cavernosum, and the dorsal artery, which runs along the dorsal aspect of the penis

Venous drainage of the foreskin and skin of the penile shaft is via the superficial dorsal vein, which turns either to the right or left before joining external pudendal vein Drainage of the glans penis and corpora cavernosa is mainly via the deep dorsal vein.

Nerve supply of sex organs

The genitalia of both men and women are richly supplied with sensory nerve endings Some are concentrated around blood vessels and may be important in monitoring vasocongestion, others may be peculiar to erotic perception. The clitoris is particularly rich in nerve endings, containing a similar number of those found in the penis, though obviously concentrated in a much smaller space. These sensory fibers are taken to the second and third sacral roots of the spinal cord in the pudendal nerve Efferent fibers from S4 supply the muscles of the penis, the ischiocavernosus and bulbospongiousus, responsible for erection and rhythmic contraction during orgasm.

The autonomic nerves supplying the blood vessels of the genitalia and involved in the neural control of vasocongestion derive from the sympathetic and parasympathetic systems Sympathetic fibers from the thoracic rami and upper lumbar rami pass to the pelvic plexus From there, fibers run to the genitalia. The parasympathetic supply is from sacral outflow, S2, S3 and S4, and these fibres run to the genitalia via the pelvic splanchnic nerves

Physiological responses of the male genitalia

Changes in the genitalia of both the male and female mainly result from localized vasocongestion These local vascular changes can occur within 10-30 seconds of the onset of sexual stimulation, whether psychic (mediated via the brain) or reflexive (reflex pathways in the spinal chord) (Fig 5). In the male the principal effect is erection of the penis. In addition the testes becomes elevated due to retraction of the spermatic cords and contraction of the associated cremasteric muscle The elevation of the testes is necessary if the full force of ejaculation is to occur.

Penile erection

Adequate entry of the penis into the vagina, and consequent

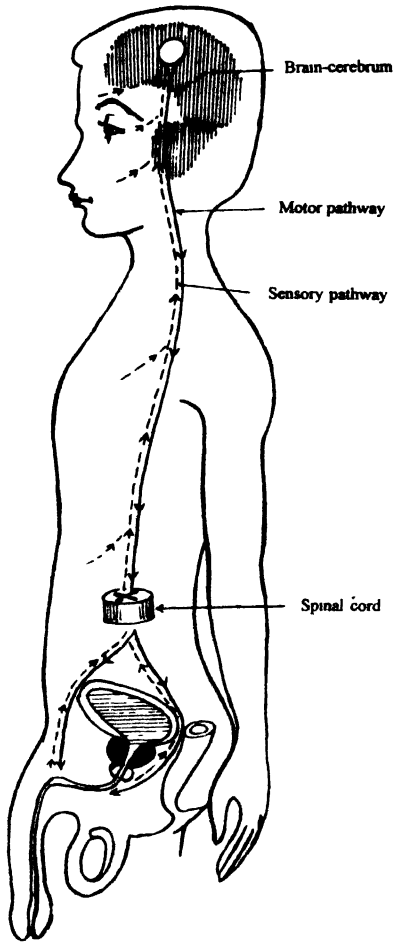


Fig. 5: Neural control of male sexual response

deposition of semen, is relatively difficult without full erection. An erect penis becomes stiff when the erectile tissue within the corpora cavernosa gets filled with blood and there is an increase in intracavernosal pressure to around systolic levels

To produce the pressure necessary for rigidity, reduced emptying as well as increased filling of the erectile tissue is obviously required. The crucial components of erection are:

1. Relaxation of the smooth muscle in the sinusoidal walls. These are normally constricted by an active process of adrenergic tone. Reduction of this tone and consequent relaxation then results in filling and enlargement of the spaces with blood.
2. Passive compression of the venules running between the sinusoidal spaces, impending venous outflow and further increasing sinusoidal filling.
3. Dilatation of the arteries resulting in increased inflow. The combination of these processes leads to an effective sealing off of the corpora cavernosa and build up of intracavernosal pressure to around systolic levels. Additional stiffening may result from transient contraction of the ischiocavernosus and bulbospongiosus muscles.

Female sex organs

Vulva : This include the mons pubis, the labia majora and minora, the clitoris, the vestibule and Bartholin's glands (Fig 6a & 6b). The mons pubis is a rounded eminence of fatty tissue in front of the pubic symphysis.

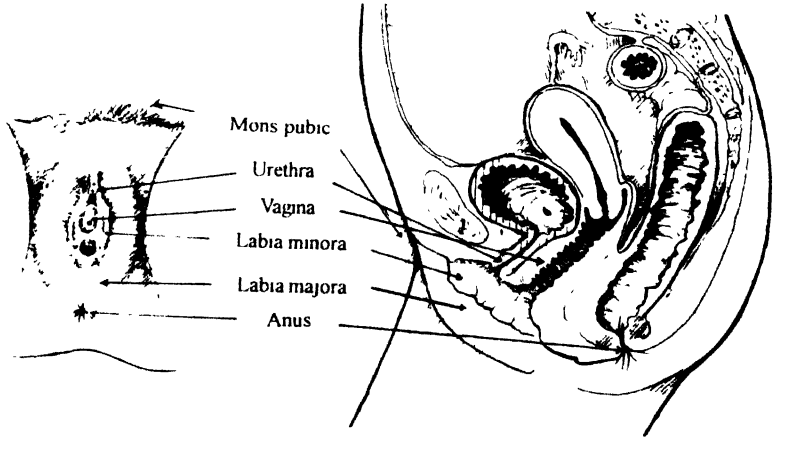


Fig. 6a & 6b : Female sex organs

Labia majora : These are longitudinal folds extending from the mons pubis to the perineum. The outer aspect is covered with hair but the inner aspects are smooth and the skin contains numerous sebaceous glands. They are anatomically equivalent the scrotum in the male.

Labia minora : These are small cutaneous folds, devoid of fat which unite above to form the prepuce of clitoris and below join at the fourchette The vestibule is a cleft between the labia minora and situated in it are the external urethral and vaginal orifices.

Bartholin's glands : Homologues of Cowper's glands in the male, they lie within the labia majora, one on either side Their ducts open on the inner surface and at the junction of the middle and the posterior third of the labia minora The ducts are lined with columnar epithelium.

Female Urethra : In the female the urethra is much shorter -- about 4 cm long. The part adjacent to the bladder is lined with transitional epithelium and the length is lined with stratified squamous epithelium Many small glands open into the urethra and their ducts are lined with columnar epithelium Skene's glands or paraurethral glands, which are homologues of the prostrate gland in the male, are situated on either side of the lower end of urethra.

Vagina : The vaginal canal extends from the vestibule to the uterus, where it surrounds the lower part of the cervix forming the anterior, posterior and two lateral fornices. The vagina in the non-aroused state is collapsed with a cross-section, shaped like the letter 'H'. The lumen of the vagina, when distended, is like an inverted flask, because the upper two thirds are lax and capacious, whereas the lower third is closely invested with the surrounding pelvic floor muscles. Vaginal mucosa is thick membrane lined with stratified squamous epithelium with a high

glycogen content Normal secretions of vagina show epithelial cells and a large number of Gram positive bacillus, the bacilli of Doderlein. The action of the bacillus on the glycogen of the cells produces lactic acid which is responsible for the acidity of vaginal secretions The acidity and the stratified squamous epithelium of vagina provide protection against gonococcus and other pyogenic organisms.

Uterus, fallopian tubes and ovaries : The uterus has two parts, the body is above the internal os and the cervix below it (Fig 7). The body is lined with endometrium which constantly changes with each menstrual epithelium The endocervix is lined with columnar epithelium The ectocervix, i e cervix on its vaginal surface, is lined with stratified squamous epithelium The upper part of the body is termed the fundus, at each upper and lateral angle it is joined by a fallopian tube Each tube is about 10 cm long and terminates in the fimbriated end near the ovary The ovaries are oval-shaped structures, one on each side of the uterus lying in relation to the posterior layer of the broad ligament below the fallopian tubes

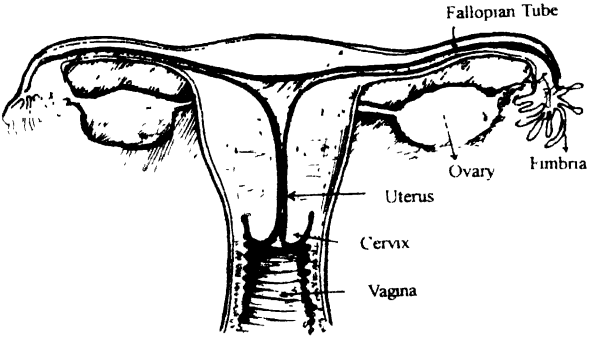


Fig. 7: Uterus, fallopian tubes and ovaries

Physiological response of the female genitalia

The consequences of erotically induced vasocongestion in the female are more extensive and complex than in the male. The

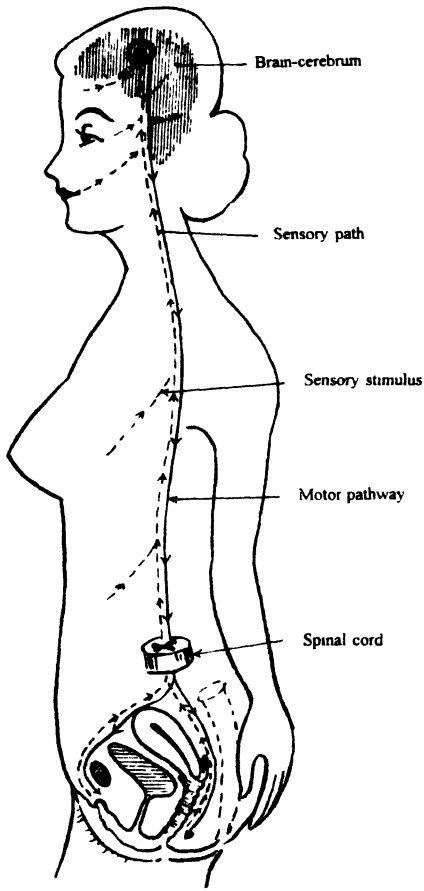


Fig. 8: Neural control of female sexual response

venous plexus which surrounds the lower part of the vagina, the erectile bulbs of the vestibule (equivalent to *corpora spongiosum*) and the deeper structures become engorged. A turgid cuff thus forms which narrows and elongates the outer third of the coital canal. Further stimulation preceding orgasm cause reddening and 'pouting' of the labia minora. The clitoris which erects to a variable degree in the earlier stages of sexual

response now retracts to a less prominent altitude against the symphysis pubis The uterus becomes engorged and increases in size, at the same time rising in the pelvis This also elongates and causes the upper two-thirds of the vagina to 'balloon'. Slow irregular contraction of the vaginál vault may occur as sexual stimulation continues As the blood supply to the vaginal wall increases a fluid appears on the vaginal epithelium, quickly forming a lubricating coat since vaginal lining contains no mucous glands. This fluid is a modified plasma transudate. Mucus secretion from the Bartholin's glands in modest amounts also occur during the later part of sexual arousal An erection of the penis in the male facilitates entry into the vagina, as do the genital changes in the female (Fig 8)

The congested and pouting labia and the more patent introitus invite entry of the penis, whilst the vaginal transudate lubricates the vaginal barrel in readiness The narrowing of the outer third of the vagina, the so called 'orgasmic platform' adds to the stimulation of the penis The ballooning of the inner third of the vagina may aid conception by encouraging the formation of a seminal pool near the cervix and reducing drainage of semen out of the vagina. The vaginal transudate by its effects on electrolyte content, and the pH of the vagina make the vaginal milieu more favourable to sperms

* * *

CHAPTER 3

GENITAL ULCER DISEASES

Ulcers

An *ulcer* is a break or discontinuity in the skin or mucous membrane surface, with loss of surface tissue. The surface becomes dead or necrotic, making it more susceptible to secondary infections and resulting in an open sore Ulcers are also at times described as *lesions* a term in use for abnormal tissue changes The ulcers on the genitals are caused by a host of bacterial, viral, amoebic and protozoal organisms which may be sexually transmitted resulting in genital STDs. At other times they may develop not due to STDs but may be traumatic or due to allergy to some systemic medication taken for an unrelated ailment even

Genital ulcers commonly account for a large patient attendance in STD clinic. Depending on their causative organisms they could have serious consequences, specially in the case of syphilis If untreated it can lead to serious life threatening complication affecting the heart, big vessels and nervous system An untreated syphilitic pregnant woman either aborts α has a still born baby, or one with congenital syphilis At times these ulcerative conditions on the genitals may be responsible for destructive lesions on genitals and even cancer Genital ulceration may also be a predisposing or concomitant factor for enhanced transmission of the AIDS virus

Ulcerative STDs

STD ulcers like syphilis, chancroid, donovanosis, LGV and some others are described in some detail These are distinguished from the non-venereal ulcers, which are also mentioned because genital ulcer should not necessarily be treated as a sexually transmitted disease merely due to its presence on the sexual organs

Syphilis

Syphilis is an infective sexually transmitted disease spread by contact with an infected sexual partner.

Causative organism : Syphilis is caused by *Treponema pallidum*, (Fig.9), a spiral organism of the size of a red blood cell. These organisms are present in the clear discharge of syphilitic ulcer(s) and can be seen under a special type of microscope called dark-field microscope. When seen under this microscope against a dark background, these spiral organisms shine, moving slowly in the field and on their own axis.

Primary syphilis

The first sign of disease appears after an average of two to six weeks of sexual contact with an infected partner It takes

Fig. 9: Treponema pallidum ; Causative organism of syphilis

the form of a painless, hard sore, therefore is also called hard sore. It is 4-6 mm in size and present on the frenulum or coronal sulcus in the male and on the lips of female genitalia and fourchette. These ulcers discharge a clear watery fluid on pressing. The ulcers are either single or limited to two or three There is accompanying painless, shotty lymph node enlargement in the groins. These ulcers may appear as early as 10 days or even as late as three months after sexual intercourse with infected partner The discharge from these ulcers is highly infectious and the healthy sexual partner of an infected individual is in great danger of contracting the disease. This first stage of the disease is called *primary syphilis* (Fig 10).

Secondary syphilis

If the individual does not get treated suitably and adequately either due to negligence or painless character of the ulcers the syphilitic ulcer heals spontaneously leaving a remnant scar It is important to emphasise that though the disease seems to have disappeared from the genital surface it has in fact spread through the blood system to the whole body. After an average interval of six to eight weeks, it reappears in the form of a generalised rash over the skin surface and erosions on the mucosae of the genitals and anal region and the inner surface of the mouth and lips. This is accompanied by generalised lymph node enlargement in the groin, neck, axilla, and above the elbows, etc. The patient has a feeling of not being well and complains of headaches and pains in the shins, breastbone, collar-bones, etc. The headache is due to the invasion of the covering layers of the brain and the spinal cord The bone pain is caused by the involvement of the blood vessels of the bones. The peculiarity of the rash of syphilis is that though it is symptom-free, i.e. without any itching, rawness or pain, it gets manifested in many forms

In fair-complexioned or light-skinned people the rash may be seen as rosy pink, while in dark-skinned individuals it may look

coppery dusky brown in colouration. At times the rash of syphilis may be scaly and raised above the surface. These rashes are spread over the whole body, particularly on palms and soles. At times pus filled patches and necrotic skin lesions may be seen, indicating a very severe form of the disease called *syphilitic maligna*. Besides the superficial erosive lesions seen in mouth and genital mucosa, raised wet, grayish plaques may be seen around the anus and in the opposing surfaces of the groins and scrotum. In contrast to the genital ulcers of primary syphilis which have scanty spiral organisms of syphilis, these moist lesions over the genital mucosa are teeming with syphilitic organisms. Therefore, a person at this stage of syphilis is highly infectious to sexual partners and other persons in his close contact/touch.

If still untreated at this stage, the rash of secondary syphilis may recur twice or thrice at varying intervals of a few months during the first two years of acquiring the infection. This is known as recurrent secondary rash of syphilis (Fig.11).

Early latent syphilis

Even if the rash does not recur after appearing in secondary stage, and the patient has remained untreated for syphilis, the disease though apparently absent from the skin surface remains very much in the body systems This can easily be confirmed by a simple blood test. Thus, disease is present in a hidden form This stage of syphilis without any manifest symptoms and only a positive blood test is known as *early latent syphilis*. This occurs during the first two years of acquiring the infection Though the infected person at this stage of the disease might have become non-infectious to his/her sexual partner, a child born to such a person has a high potential of being syphilitic if the pregnancy occurs during this phase Even in its earlier stages, i e , either primary sore or secondary rash syphilis can be easily confirmed by a simple blood test called VDRL. During this early stage i.e., first two years of acquiring the infection, treatment is simple and effective -- the disease cures completely without any remnant damage

Treatment of early syphilis

This consists of a single injection of long acting penicillin (Benzathine penicillin, 2.4 mega units or 24 lakh units) Patients who have drug allergy to penicillin can alternatively be treated with other broad spectrum antibiotics like tetracycline, erythromycin etc., given daily over a period of two weeks.

The treatment of patient at this stage of syphilis needs to be carefully monitored by the treating physician over a period of six months to two years with follow-up examinations and blood tests. A positive blood test becomes negative over a long period Patients are advised to get their sexual partners treated and avoid further sexual contacts with infected partners till they are completely cured Proper counselling with regard to marriage and conception can also be given by the physician

Tertiary or late syphilis

The syphilis which has remained untreated through the earlier stages of disease, i e , in its primary, secondary form or early latent forms passes into the third or tertiary stage where in a majority of cases it remains symptom-free except for a positive blood test throughout life But for the less fortunate ones, at the end of one, two or three decades of acquiring infection, the disease may involve the following systems of the human body.

- Skin and bones
- Heart and blood vessels
- Brain and spinal cord

Skin and bone involvement

In this stage deep, clean clear-cut ulcer form on the skin and bones. These heal very slowly by thin scarring which breaks down The ulcers may either be single or multiple and of varying

Fig. 10: Primary sore of syphilis

Fig. 11: Erythematous raised lesions of secondary syphilis

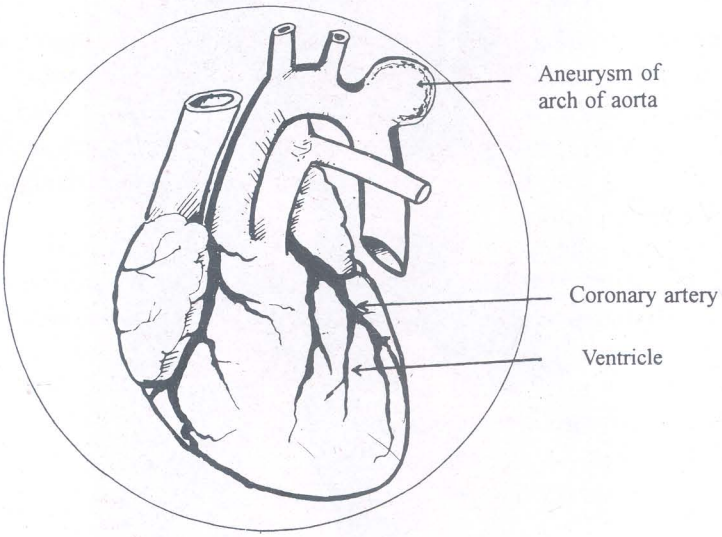


Fig. 12: Aneurysm of aorta in tertiatry syphilis

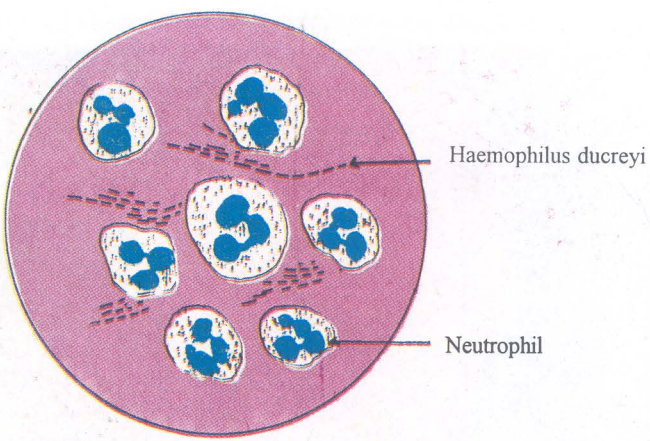


Fig. 13: Haemophilus ducreyie : Causative organism of chancroid

sizes. In contrast to the ulcers of the primary stage, no spirochetal organisms of syphilis are present in them. The diagnosis is confirmed by a history of previous ulcers on the genitals decades back and/or a positive blood test for syphilis

Heart and blood vessels involvement

The heart and blood vessels are involved in the tertiary stage of syphilis The involvement is of two types:

1. Occlusion of blood vessels supplying the heart muscle which results in a lack of blood supply to the heart, producing chest pain and other symptoms of a heart attack
2. Invasion of the walls of big vessels like the aorta by the organisms of syphilis, splitting them into two to three strips like banana peel and thus making them weak and unable to sustain the gush of blood from the heart. This causes severe palpitation on exertion and visible pulsation of the chest wall over the heart surface In severe cases, these large vessels may rupture suddenly causing instantaneous death (Fig 12)

Brain and spinal cord involvement

The brain and its covering membrane may be involved producing varying symptoms depending on the part involved

The involvement of the covering membranes of the brain and spinal cord may produce irritation, headache of long duration and fits The blindness and loss of hearing seen in these cases may be due to the fact that the nerves supplying these organs originate from the brain

Deeper brain tissue involvement results in paralysis of limbs and acute and severe mental disturbances, medically known as *general paralysis of the insane*. The spinal cord

infection results in excruciating pain around the trunk and abdomen, weakening of limbs, and serious bladder and bowel disturbances leading to loss of control over the urination or defecation acts.

Outcome and treatment of late syphilis

The damage to the bones and skin tissues, heart and blood vessels and brain and spinal cord manifested in the late stage of syphilis is irreversible. Conventional treatment for syphilis at this stage neither alters its course nor undoes the damage which has already set in. Fortunately, due to the extensive usage and availability of effective broad spectrum antibiotics, the incidence of late syphilis has been considerably reduced Very few cases of late cardiovascular and neurosyphilis are seen these days

Syphilis affecting the child in the womb and the new born

The foetus of a pregnant woman suffering from syphilis is sure to be affected The organisms of syphilis invade the womb through placental blood flow after the third month of pregnancy In the event of a woman with syphilitic infection becoming pregnant and remaining untreated, she may abort, there may be a stillbirth or a very weak and thin baby with blood filled blisters on the skin surfaces and involvement of bones is born which may not survive Such a child is highly infectious due to the millions of syphilis organisms in the blister fluid Women suffering from syphilis may also give birth to children with stigmata of congenital syphilis They may manifest itself as a prominent, bulging forehead, linear scars around the mouth, peg-like incisor teeth and perforation of the palate There may be acute tenderness and pain in upper and lower limb bones due to syphilitic involvement The eyes may also be involved leading to blindness The best course to prevent the involvement of the foetus and the birth of a child with congenital syphilis or its stigmata is

to detect the evidence of syphilis in the pregnant mother, both very early in the course of pregnancy and towards the last phase, and treat it promptly This can very easily be done if the pregnant mother undergoes the simple VDRL blood test for the detection of syphilis at these two points in her pregnancy A pregnant woman treated at this stage not only gets herself cured of syphilis but also prevents the infection from being passed on to the foetus or the baby A newborn child with congenital syphilis should be promptly treated with adequate doses of penicillin and the parents should be investigated and treated for syphilis immediately after its detection

Chancroid

This sexually transmitted disease is caused by the bacteria *Haemophilus ducreyi*, which under the microscope look like pink rods in chains (Fig 13) It manifests itself as multiple ulcers on the genitals with enlargement of lymph nodes in the groin In India this is the most common sexually transmitted disease amongst genital ulcers The ulcers, usually multiple develop one to five days after sexual intercourse with an infected partner Painful and covered with pus they bleed easily on touching or manipulation There is no firmness at the base of these ulcers, they feel soft on pressing in contrast to the hard syphilitic sores and are therefore also known as *soft sores* The ulcers are commonly seen on the front part of penis, prepucial margins or frenulum in the males, and on the lips of the female genitals and in pubic region (Fig 14) In the males the presence of ulcers along with supervening secondary infection may make it difficult to retract the prepuce, and as a result of the infection from hidden ulcers the prepuce can swell up, become inflamed and in extreme cases may even slough off Very rarely the presence of such ulcers at the tip of urinary passage cause scalding during urination The ulcers vary in size and shape. While some are fairly shallow, others may be considerably large and may even cause extensive destruction of the genital organs and the

Fig. 14: Ulcers of chancroid

Fig. 15: Ulcers of donovanosis

surrounding tissues. Following the appearance of an ulcer a soft, warm and acutely painful swelling of lymph nodes appears in the groins. In a majority of cases this affects one side but sometimes may involve both the groins. If not treated in time and properly this swelling may at the top rupture discharging pus and causing the roof of the swelling to collapse. However, the damage is local; there is no involvement of any distant tissues and organs like that seen in syphilis

The maintenance of genital hygiene by cleaning with lukewarm salt water is to be maintained It helps in removing the pus and slough present over the sores If there is a pus discharge from the under surface of the prepuce and the prepuce is inflamed and oedematous and cannot be retracted back, lukewarm salt water should be applied to the underlying ulcers using wet cotton The painful inguinal swelling can also be given fomentation with warm salt water. In case of excessive swelling of the prepuce and penile shaft, they should be supported after fomentation with warm saline by a T-bandage or *langot* On the inflamed lymph node swelling in the groin warm balladona can be applied Drugs like long acting sulfa in combination with trimethoprim, tetracyclines, etc given in adequate doses for approximately 10 days or till the ulcers are healed, are successful in managing the condition As in all STDs all sexual contacts are to be simultaneously examined and treated.

Donovanosis

Donovanosis or granuloma venereum is the third common ulcerative disease seen amongst the STD patients following chancroid and early syphilis The disease derives its name from Charles Donovan, who was the first to identity its causative organism in 1905 at Madras. He was also responsible for describing the organism of kalazar Other names of disease, such as *granuloma venereum* and *granuloma inguinale* originate from the granulomatous character of the ulcer and their mode

of acquisition, namely, venereal. Sometimes it is also seen in the groins, therefore the name inguinale, in the inguinal region.

The ulcer of donovanosis appears after two to four weeks of sexual contact with the infected partner. Its average period of onset is around three weeks. The initial lesion appears as a raised nodule on the genitals, which in a matter of few days breaks to assume the form of a fleshy, exuberant and reddish ulcer. If untreated it spreads peripherally to occupy large areas, particularly moist areas like the folds of the groin, scrotum, area below the root of the penis and around the anus Significantly, in contrast to the ulcers of syphilis and the soft sore there is no lymph node enlargement. The ulcers in the male can spread from the penis to the groins, while in the females they have a tendency to spread downwards and backwards towards the anus. Rarely they spread to distant areas by lodging of the infected materials in the finger nails or due to infected clothes or poor hygiene Due to overlying secondary infections, the ulcers may become destructive and involve the deeper tissues of the penis, resulting in its partial or total amputation and adjoining areas.

Longstanding and untreated ulcers may result in the pseudoelephantiasis (Fig. 15) of the genitals, including the vulva and clitoris in females At times there may be a narrowing of the urinary passage, birth canal and anal orifices Such serious neglect is also responsible for the loss of function of sexual organs At times it may even lead to cancerous growth in the involved tissues and organs.

The disease is easily diagnosed by making a tissue smear and seeing it under a microscope after special staining. The bacterial organisms are seen within large tissues cells and white blood cells (Fig. 16). The organism cannot be grown in laboratory culture media

Genital hygiene of ulcerative areas by washing with lukewarm

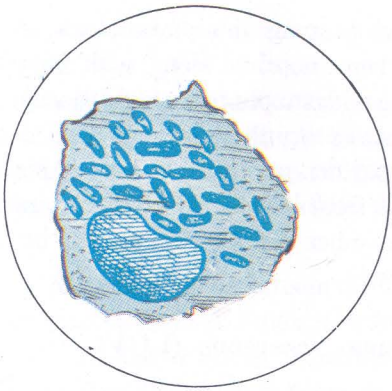


Fig. 16: Donovan bodies: Causative organism of donovanosis

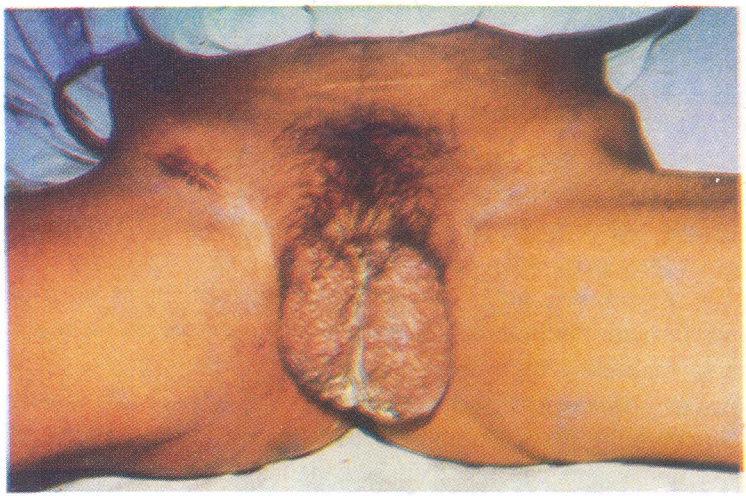


Fig. 17: Elephantiasis of female genital organs in LGV.

saline water and keeping the parts clean is most essential. Antibiotics like trimethoprim, along with long acting sulfa or tetracycline, along with streptomycin in full dosages for a minimum period of two weeks or till the ulcers heal are necessary for its cure. Sexual partners are to be examined simultaneously and advised abstinence from sexual contact. If carrying the donovanosis infection or any other STD, they are to be adequately and completely treated.

Lymphogranuloma venereum (LGV)

LGV is predominantly a disease of the lymphatic tissue. It is caused by micro-organisms, subtypes of which are responsible for diseases like trachoma, an eye disease which is a major cause of blindness in India and non-gonococcal urethritis responsible for the infection of the urinary passage and discharges from it. These organisms gain entry into the genitals through minute lacerations and abrasions

The primary lesion of LGV is in the form of an erosion or a shallow ulcer appearing at the site of infection after three to twelve days of sexual contact with the infected partner Most of the time it heals rapidly and inconspicuously The most common sites in men are glans, frenulum, foreskin and scrotum. In women it commonly appears on the vaginal wall, fourchette, cervix and vulva, from where its causative organisms are taken up by the lymphatic tissue, producing infection in them The infection also involves their surrounding tissues Thus the lymph nodes draining the site of primary infection rapidly enlarge and burst open at places through multiple openings forming abscesses and sinuses Due to multiple lymph node involvement in the groins a grove known as *groove sign* is seen, a characteristic of LGV. Gradually the process becomes chronic, extending to deeper groups of lymph nodes and causing extensive damage. The extension of infection to the lymphatics leads to the involvement of the deep iliac and perirectal lymph nodes higher up in the abdomen and by the side of rectum, respectively The pressure on the lymph

nodes during the healing phase leads to elephantiasis of the genital organs including the lips of the female genitals (Fig. 17). Involvement of lymph nodes around the rectum results in symptoms like fever, rectal pain, incomplete sense of evacuation, constipation, and ultimately narrowing of the rectal passage, manifested by the passage of 'pencil' thin stools.

Due to its spread through the bloodstream the infection becomes generalised and can involve the liver, lungs, joints and cerebrospinal fluid (CSF), along with the covering membranes of the spinal cord In this condition the disease is at times difficult to manage and become life-threatening

The disease can be diagnosed through various blood tests. A positive test indirectly demonstrates the presence of causative organisms Maintenance of genital hygiene is of paramount importance to check further damage to and infection of the surrounding genital tissues Tetracycline is given in full dosage for a period of 14 days or till the lesions completely heal

Complications like narrowing of the rectal canal and infected fistulae may need surgical interventions All sexual partners exposed to LGV should be examined for STD and promptly treated with adequate antibiotics Changes in sexual behaviour namely avoidance of promiscuous sex and the practice of homosexuality can prevent this damaging STD and its dangerous complications Improvements in the standards of living and genital hygiene along with health education and medical care, is expected to bring about further decline in the incidence of this disease

Other genital ulcerative STDs

Besides the causative organisms and disease symptoms produced by syphilis, chancroid, donovanosis and LGV, other veneral causes of ulcerations may be herpes genitals and balanitis and vulvitis due to other organisms.

Herpes Genitalis

Herpes genitalis is caused by herpes virus group-2 (HSV-2) and uncommonly by HSV-1. In the context of increasing incidence of AIDS and HIV positivity, the incidence and severity of symptoms of this disease is on the increase.

Signs and Symptoms

Primary or the first attack of herpes genitalis with multiple superficial painful ulcerations over genitals and comes a short period after sexual exposure (less than one week) to an infected partner. Besides the genitals, the ulcerations may be present over other sites, like vulva, birth canal, anus, inner side of thighs or pubic region also. Lymph node swelling in groins and symptoms like headache, fever, photophobia are also seen in a good number of cases. The patients at this stage are most infectious to their sexual partners and to new-born babies born to mothers suffering from it during their passage through the birth canal. There may be 50 per cent mortality in new-borns, born to such infected mothers.

The infection persists and is a cause of recurrences of grouped tiny vesicles and erosive lesions, which though less painful are infective and embarrassing to the patient (Fig. 18). The precipitating causes of recurrences can be stress, sexual intercourse, menstrual periods and climatic changes.

Treatment

No curative treatment is available. Recurrences, psychosexual problems of depression and breakdown of sexual and marital relationship and chances of increased neonatal infections and mortality in new-born make this disease really problematic. An antiviral drug, Acyclovir, taken by mouth of dosage of (200 mg), upto five times a day or as per physician's advice can reduce

in the early stages. To suppress the recurrences the treatment has to be continued for months.

Balanitis and Vulvitis

The infections and erosions on the penis in the male and over the vulva in female are termed as *Balanitis* and *vulvitis,* respectively.

Causative agents

The common causes for them are anaerobic bacteria, non-specific treponemes (different from the one causing syphilis), *Candida albicans* and in women *Trichomonas Vaginalis,* infection. In case of Candida albicans, urine and blood sugar should be tested to find out diabetes mellitus, in patient or in his sexual partner. At times the erosions and ulcerations due to anaerobic bacteria and non-specific treponemes are acutely progressive and can lead to swelling and destruction of the genital organs

Management

They need intensive cleaning, maintenance of genital hygiene and intensive treatment with suitable antibiotics In very severe cases, local surgical procedures may be required

Traumatic genital ulcerations

Sexual injury to the genitals and lack of their proper care may precipitate secondary bacterial infections, responsible for swelling of the foreskin of penis, pus discharge from the underlying surface of penis and ulceration and destruction of the part. Application of chemicals or indigenous local application for sexual cures may also at times cause swelling and ulceration of the genital organs.

Non-Venereal genital ulcers

Rarely, non-venereal factors, like, drug-allergies, specially like, fixed drug eruption, cancerous growth resulting in ulcerations, tuberculosis of the genitals, secondary infections following parasitic infections, like, scabies, may be the cause for genital ulcerations. Some other skin diseases unrelated to STDs, like, psoriasis, lichen planus, balanitis xerotica, etc. may also cause ulcerations in the genitals

* * *

CHAPTER 4

UROGENITAL DISCHARGES

Discharges from the genitals in men are rare under normal situations but they are a common occurrence in women, popularly known as *leucorrhoea* (*leuco*, meaning white and *rrhoea*, meaning to flow) In women of the reproductive age group leucorrhoea is responsible for a lot of weakness and sexual and social embarrassment, most of the time it is accompanied by a lowe backache and ill health

In men genital discharge is nearly always due to a communicable sexually transmitted disease (STD) There is usually a whitish discharge at the mouth of the urinary passage, which may be accompanied by either a lot of burning and scalding, or there may simply be a bead of thin white fluid without much discomfort The nature of the discharge depends on the causative organism responsible for the discharge

In the pre-antibiotic era genital discharges were responsible for a number of devastating complications in men like narrowing of the urinary passage, resulting in extreme pain during urination and causing extensive damage to other genital and urinary organs.

To aid readability and enhance understanding genital discharge is described under the following headings

1 Discharge from the urinary passage in males
2 Discharge from the vagina i e , birth canal in females
3 Discharge in children
4 Complications

Discharge from the urinary passage in males

In men a discharge due to sexually transmitted infections is present

Fig. 18: Tiny vesicular lesions on shaft penis in a case of herpes genitalis

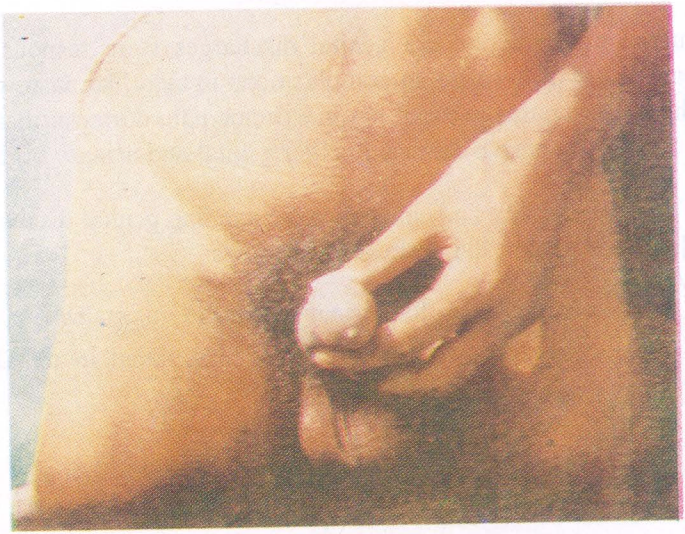


Fig. 19: Discharge at the tip of male urethra in a case of gonorrhoea

at the mouth of the urinary passage called the urethra. It is often accompanied by redness, erosions and discomfort during urination, which may be mild to very severe. Term *gonorahoea* derives its name from the bacterial organism *Neisseria gonorrhoeae* which is responsible for this infection. In acute cases the discharge is thick, creamish white (Fig. 19) soiling the underclothes and there is severe pain when passing urine since it passes through an inflamed passage. Thus, these patients report early to the doctor. Treated promptly at this stage, the patients recover without any complications. An experienced doctor can correctly make the diagnosis by simple clinical examination. In cases of doubt or where laboratory facilities are available, it can be confirmed by making a thin smear from the discharge on a glass slide and examining it under a microscope after proper staining (Fig. 20)

In many of sexually active and homosexual men either following the treatment of gonorrhoea, or as such, there appears a thin, whitish discharge at the tip of the urinary passage with little or no discomfort Sometimes the discharge is so scanty that it is not seen by the patient but he complains of mild burning in the urinary passage, or a bead of pus forms at the mouth of the urinary passage early in the morning when he sits for urination.

In contrast to the thick, creamy and copious discharge in gonorrhoea, this discharge is thin, scanty and whitish in appearance. At times in the absence of symptoms the diagnosis can be made by taking a scrape smear from the lips of the urinary passage which shows pus cells without any recognisable organisms. This in medical terms is called '*non-gonococcal urethritis*' and is caused by a number of organisms. In rare instances the burning and scalding discharge in the urinary passage is produced by mechanical or chemical trauma, insertion of blunt objects or some strong substances used in washing the private parts.

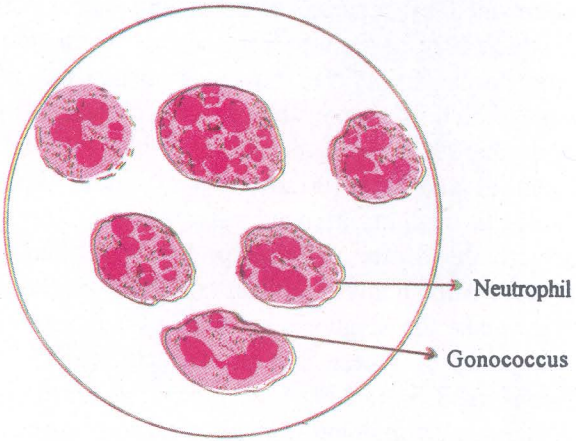


Fig.20: Gram negative diplococci in pus cells: Causative organism of gonnorohoea

Discharge from the vagina

In women thick and creamish discharge is present at the opening of the birth canal, which on special examination by the physician looks red, swollen and slightly eroded. If untreated for long periods the infection spreads to the passage also by gradual flow from the site of the profuse discharge. At times the discharge results from intercourse with an infected male partner. Infections of long duration do not produce sharp pain, as in men, but are manifest as a dragging lowe backache, accompanied by a feeling of being unwell and low-grade fever. There is also itching in the genitals, and at times burning during urination. Though leucorrhoea is common in women, it may not always be due to a STD. As in men, the sexually transmitted discharge may be due to *Neisseria gonorrhoea*, a major cause for discharges with significant complications or other organisms. In those with poor genital hygiene parasitic infection with organisms like *Trichomonas vaginalis*, (Fig. 21) yeast infections like *candida*

vaginalis, and other less defined bacterial infections should be considered.

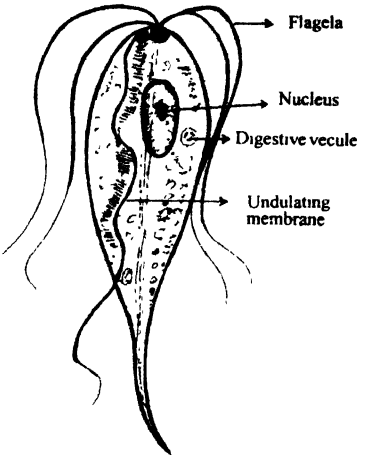


Fig. 21: Trichomonas vaginalis

Discharge from the urinary passage in children

This is rarely due to sexual transmission except in cases of child abuse or forced sexual assaults by infected adults In young boys the symptoms are similar to those in adults but in young girls and adults the symptoms differ Due to the dissimilarities in the anatomy and physiology of their genital passages, there is inflammation of the vagina and mild to moderate discharge

Complications

1. In males who do not take treatment the infection can spread upwards into the urinary passage causing serious health problems. These include damage to the kidneys, infection of the prostate, a gland surrounding the urinary passage, or the glands of reproductions like the testes and epididymis, resulting in sterility in 10 per cent to 20 per cent of the men.

2. In untreated women the ascending infection produces lower abdominal pain, associated with suspected or proven pelvic infection responsible for swelling and inflammation of the fallopian tubes and ovaries, internal lining of the uterus, and the covering layer of the abdominal organs, called pelvic peritonitis.

3. In untreated children the condition is mainly seen in newborns during the passage through the birth canal of an infected mother. Such children can be born with a severe infection of the eyes called *ophthalmia neonotorum,* if adequate preventive measures are not taken by the midwife after delivery to protect the eyes of the newborn.

4. In untreated men, women and children the organism spreads via the bloodstream with widespread symptoms The most important is a rose coloured rash, seen clearly in fair-complexioned individuals, on the arms, legs, hands, feet, around joints and in the genital area Large joints like the knees, elbows, wrists and ankles may swell up due to the collection of pus, from which the organisms can be demonstrated.

5 In homosexuals and sexual partners indulging in anal intercourse there is pain, rawness and pus discharge from the rectum. In those practising oral sex there can by inflammation of the mucous lining of the oral passage, resulting in throat ache and hoarseness of the voice.

Care of patients with genital discharge

The management and treatment of patients with sexually transmitted discharges depends on the age of the patient, the stage of the disease process and the causative organism

1. Uncomplicated urethral, cervical and rectal gonococcal

infections are treated with a variety of broad spectrum antibiotics, given in single doses depending on the drug sensitivity prevalent in the particular region Over a period of time the gonococcal organisms have developed partial to complete resistance to traditionally used penicillin for treatment In many countries the penicillin is no longer of the drug first choice, it has been replaced by other broad spectrum antibiotics, given in single doses like injection ceftriaxone 250 mg intramuscularly, injection spectinomycin 2 G intramuscularly, tablet ciprofloxacin 500 mg orally, and tablet norfloxacin 800 mg by the oral route The idea of giving a single effective curative dose for gonorrhoea is to make the patient non-infective in the shortest possible time so that the infection does not spread to other sexually active individuals in the community

2 Complicated gonorrhoea requires a longer period of antibiotic therapy of one to two weeks, depending on the condition of the patient and the improvement achieved This is to be decided exclusively by the doctor who monitors the patient till he is well In children the antibiotic dose is to be adjusted according to the body weight and stage of the disease

3 The antibiotics used for the management of non-gonococcal urethritis are the same as those used in gonorrhoea except that they are to be given over a longer period of time Penicillins and related drugs are not recommended

4 Metronidazole, 2 g in a single dose given by mouth, is effective in *trichomonas vaginalis* while this has to be repeated after 48 hours in bacterial vaginosis Patients taking metronidazole should avoid alcohol and the drug should not be taken during the first three months of pregnancy by pregnant women.

5. Diseases other than STDs e.g., diabetes mellitus, endocrinal diseases and intake of certain drugs which can lead to candidal vaginal infections should be excluded The specific treatment is introduction of antifungal drugs like miconazole or clotrimazole into the vagina for a period of seven to ten days.

6. In acute pelvic inflammatory disease (PID) doxycycline 100 mg twice a day or tetracycline 500 mg four times a day by mouth in combination with metronidazole 1G orally thrice a day are to be given for a period of 10 days. In patients with acute PID, intrauterine devices (like loop) should be removed after antibiotic therapy. When this is done oral contraceptive therapy is necessary.

Care of sexual partner(s)

For the effective control of STDs in general, and genital discharge of gonococcal and non-gonococcal origin, in particular, effective treatment of the sexual partner(s) is very important. It halts the spread of infection and prevent the recurrence in treated patients.

* * *

CHAPTER 5

OTHER STDs

STDs are a group of diseases caused by a large number of varied micro-organisms, from viruses, bacteria, mycoplasmas, protozoa, candida, fungi to parasites. Their chief common characteristic is that they are transmitted during sexual activity, including foreplay Their symptoms sometimes seem to be trivial while at other times they can be explosive, even involving multiple systems and organs leading to fatalities STDs are usually present over the genitals, but varied sexual practices like homosexuality, anal intercourse, oral-genital and oral-anal coitus can present symptoms at these sites due to diseases caused by various organisms. At times the disease is not transmitted by the sexual act, but merely by close physical contact between playmates and close family members Diseases like scabies, pediculosis, molluscum, warts, etc., may also spread among sexual partners and are therefore called *sexually transmissible diseases*

STDs of the ano-rectal region

The alimentary canal is the tube through which food passes, gets digested and is ultimately excreted as faeces Its terminal portion termed the ano-rectal region (Fig. 22) is of importance with regard to the manifestation of various STDs Syphilis, gonorrhoea, ano-genital warts, donovanosis and LGV have long been recognised as manifesting themselves in this region. In women many sexually transmitted ano-rectal infections ,like gonorrhoea, non-gonococcal infections, HSV and wart viruses can probably result from the contiguous spread of infective discharges from the genitals. Since the advent of AIDS with predominantly homosexual activity among its sufferers multiple opportunistic infections of the gastrointestinal tract, like candida, cryptococcosis, mycobacterial infections, invasion by viruses like

cytomegalovirus and herpes simplex, and increased malignancies in the alimentary canal like, *Kaposi's sarcoma* and lymphomas all have assumed added significance. Detailed descriptions of STDs and complications of AIDS mentioned above are given in the respective section.

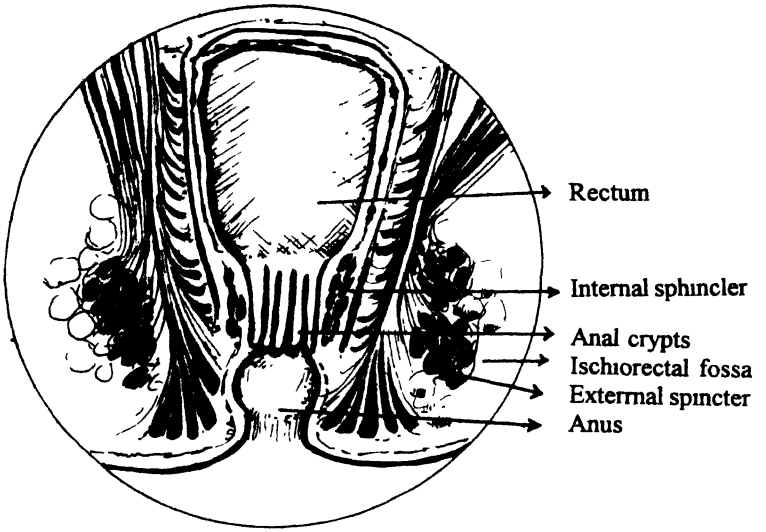


Fig. 22: Ano - rectal region

In addition, infections associated with food and water borne micro-organisms like protozoal and bacterial infections, are known to occur via sexual transmission in homosexuals

Commonly these infections are contracted due to the ingestion of contaminated food, drinks and water. People already vulnerable to such infections run a greater risk of acquiring these sexually

if they frequent oral-genital, oral-anal, anal-penile contact with a person with a history of intestinal diarrhoea or dysentery.

Intestinal infections: Sexually transmitted

In countries with poor drinking water supply and sewage disposal system intestinal infestation with protozoal and bacterial organisms are common This can also severely affect people observing poor personal hygiene e g , handling food with inadequately washed or unwashed hands, or ingesting food contaminated by exposure to the external environment, including flies.

At times many such contacts may remain asymptomatic or minimally symptomatic. Common symptoms include abdominal pain and cramps, incomplete sense of evacuation after passing stools, nausea, vomiting, diarrhoea, fever, etc , in varying degrees of severity Common protozoal infections are amoebiasis and giardiases while bacterial infections like shigellosis and salmonellosis frequently cause dysentery and typhoid fever, respectively

Infection of and mucoid discharge from the rectum is called *proctitis* Inflammation of the colon, manifested by an incomplete sense of evacuation after passing stool, is termed as *colitis*

While these infections are most commonly contracted sexually by homosexuals, they can also affect heterosexuals during sexual foreplay or people who are bisexuals.

Protozoal infections can be treated with metronidazole, as per the physician's advice In severe cases of bacillary dysentery carefully controlled fluid replacement and antibiotics like ampicillin and trimethoprim sulphamethoxazole are advised. For salmonella infection manifesting as colitis or inflammation of large intestine, antibiotics like ampicillin or sulphamethoxazole in adequate doses

are required; while for extraintestinal salmonella infections other suitable antibiotics like chloramphenicol may be needed.

Scabies

Causative organism

Scabies is a parasitic infestation caused by a mite, the size of the tip of a pin and barely visible to the naked eye. The female is about twice the size of the male mite and can be seen by the unaided eye as a black dot (Fig. 23). Due to close physical contact the mites are transferred to healthy individuals where they penetrate the soft, warm and most superficial layers of the epidermis to form burrows. The male and female copulate in the burrow following which the male dies. The female lodges itself in the superficial epidermal burrow and lays eggs which in turn develop into adult mites and make fresh burrows for their lodging in the skin.

The mite of scabies can also attack animals like dogs, cats, etc., but this species is different from the one attacking humans

Fig. 23: Mite of scabies (Sarcoptes Scabiei)

The mite infesting the human skin is called *Sarcoptes scabiei var hominis*. The accidental invasion by mites of animals kept as pets at home is much more severe in intensity.

Signs and symptoms

The most characteristic complaint of individuals infested with scabies is itching. It is more pronounced at night, disturbing their sleep. The warmth of the skin generated by the bed linen cause the adult mite to burrow in the skin further and produces nocturnal itching. The symptoms of itching are first noticed two to six weeks after infestation but reinfection may give rise to symptoms in a few hours only. The sites of itching have no relation to the mode of transmission of infection whether through sexual route or asexual, i.e., through close contact or otherwise. The common sites of involvement are genital organs, viz , penis, lips of labia majora, pubic region, inner side of thighs, peri-anal region, around the navel, below and around the breasts, front portions of the armfolds, outer aspects of elbows and webs of fingers and toes In adults face, scalp, palms and soles are characteristically not involved in scabies On very close examination by a magnifying hand lens the burrow is seen as a typical sinuous, reddish grey lesion (5-15 mm long) with a tiny vesicle at its end. In cases of sexual transmission sinuses on the genitals and scrotum are not typically seen, but there are soft, raised, reddish swellings 2-4 mm in size which are itchy and therefore marks of excoriations may be seen on them or in their vicinity (Fig 24).

Close contacts and sexual partners may not complain itching and scratching in the beginning. It takes a period of two to four weeks for the symptoms of itching to start in an individual who has been attacked by a mite for the first time. The itching is caused by the excreta and other secretions of adult mites or the debris of eggs lying in burrows. Once it starts, itching persists for long periods. Even scabicidal treatment, which kills all the live mites may not be able to counter the itching.

Diagnosis

The condition is diagnosed by the characteristic complaint of itching and scratching at night disturbing the patient's sleep. Presence of typical burrows, nodules and tiny vesicles confirm the diagnosis. Due to constant scratching and poor hygiene pyogenic organisms at times, cause secondary infections. Close contacts and sexual partners also should be examined because though not yet complaining of itching, they could be harbouring large number of mites

Treatment

The patient is advised to take a thorough soap and water scrubbing bath. The idea is to scrape open all the burrows in which the mites reside In the absence of thorough scrubbing the mites continue to multiply in their protective environment For bathing, soaps containing antiscabetic chemicals, like *tetraethylthiuram* are available but by themselves they are not enough Following a bath antiscabetic lotions like 25 per cent Benzyl Benzoate or 10 per cent sulphur ointment should be applied on the entire skin surface below the neck leaving no area uncovered If applied at home the help of an attendant can be taken The application of Benzyl Benzoate lotion/sulphur ointment is to be repeated again after 24 hours The patient is advised to take a bath on the third day and change his underclothings and wash them in soap and water Alternatively 1 per cent gama benzene hexachloride or 0.5 per cent malathion lotion or ointment can be applied all over the body. In this case one application is sufficient and the patient can take a bath after 24 hrs with soap and water and change his clothes If not successful the procedure can be repeated after week. Use of gama benzene hexachloride should be avoided in pregnant women and young children because it can be stored in body fat and appear in breast milk, or its excessive absorption in young children may harm them.

Patients should be explained that destroying all the mites on

the skin surface may not relieve them of their itching completely The persistent itching in these cases is due to the sensitivity to toxins liberated by the live/killed mites and their proteinous material Secondary infection should side by side be adequately treated by topical or systemic antibiotics, as indicated

Sexual contacts should be examined for scabies or any other sexually transmitted disease Even in the absence of any complaints of itching they should also be treated for scabies, simultaneously explaining the need for it as they may be harbouring the disease. In cases of non-sexual transmission, children and other family members and close contacts should be examined and treated, if necessary.

Ano-genital/Venereal Warts

Causative organism

The most common viral STD, ano-genital warts are contracted through indiscriminate and unprotected sexual contact The name, veneral warts, is derived from the sexual mode of transmission Due to their varying shapes and sizes they are popularly known as *fig warts*. The causative virus is known as *human papilloma virus (HPV)* Many types of this virus can lead to cancerous growths The wart lesions appear after six weeks to nine months of sexual exposure, with an average incubation period of two to four months.

Signs and symptoms

Genital warts are soft, flesh coloured, cauliflower or fig-like growths At other times they may be flat or look like sores Usually multiple, they grow rapidly on the genital mucosal surfaces due to moisture and warmth. Warts can be found in men on the front portion of the penis, scrotum, and at the mouth of urinary passage In women they are seen on the vulva, birth canal, and mouth of the womb. The warts may be present around the anus, mouth or tongue in both sexes depending upon anal

or oral sexual activities In some cases, especially females, the only complaint may be burning and itching without manifest warty growths In these cases special techniques, like painting the surface with 2 per cent acetic acid and examination by special instruments which enlarge the magnification many-fold, like *colposcope*, need to be used for confirmation of the diagnosis (Fig. 25).

Management and treatment

The best way to avoid HPV infection is by practising safe sex, i e., adhering to one, faithful partner or in the case of multiple sexual partners using condoms, though these are not foolproof methods.

Traditionally, caustic substances like a plant resin, 25 per cent podophyllin in solution form, and trichloroacetic acid in 50 per cent strength are applied by the physician on the wart lesions. In cases of redundant and non-responding warts, surgical procedures are to be undertaken

In *cryosurgery* (cryo means cold) the warts are frozen along with the surrounding skin so that they fall off on their own. Electrosurgery employs electric sparks to burn away small warts. Laser therapy and injection of some intralesional drugs are the newer methods in vogue. The therapy to be undertaken is decided by the treating physician and none of the treatment methods, even the application of caustic chemicals, should be undertaken by the patient himself because of the danger of damaging the surrounding delicate skin.

Molluscum Contagiosum

Causative organism:

The molluscum contagiosum is caused by a DNA pox virus. The disease and the virus have the same name. It is a contagious viral condition spread by close body contact, clothing or towels.

Fig. 24: Scabies: Genital lesion

Fig. 25: Genital warts

It is commonly seen in young children and adults who acquire it by non-sexual transmission during play or at school. In sexually active individuals, specially with multiple partners, this disease may manifest itself as pearly white, raised, split pea or smaller lesion with a central dimple in the genital area, as on shaft of the penis, scrotum, vulva, around the anus, on lower abdomen, and the inner side of thighs (Fig. 25). Doctors easily diagnose this disease by its appearance. In cases suspected due to sexual transmission, other sexually transmitted diseases like syphilis or gonorrhoea should be excluded in the patient's history and examination for other STDs besides molluscum contagiosum should be conducted (Fig. 26).

Fig. 26: Molluscum contagiosum

The lesions are easy to treat. The physician extracts the viral material by a sharp needle, and applies phenol on the end of a pointed swab stick to the central part of the lesion. The procedure need to be repeated at times. The sexual partners should also be examined and if infected, should be treated simultaneously.

Pubic louse infestation

Infestation by the pubic louse is called pediculosis pubics and

is caused by *Phthirus pubis*. It differs from body or head louse, in that it is shorter and stumpy and therefore also called *crab louse*. The insect is small (1-2 mm) and has three sets of legs. The adult adheres to the pubic hair but hair at other sites, like the inner side of thighs, armpits, eyebrows and eyelashes may also be invaded by the same louse. It is bloodsucker; if closely seen at the base of the hair on the skin there may be dusky brownish spots. The female lays eggs at the base of the hair, known as nits, which hatch into adult ones in seven days time The adult louse is transferred from one to another individual by close physical contact, sexual or otherwise. It is not transmitted through clothing or bed-linen as in the case of body louse (Fig 27)

The presence of pubic lice causes itching and irritation. Sometimes there may be marks or excoriation on the skin surface with dusky brown spots Many a time the individual may remain unaware and may be shocked and distressed to learn about the presence of adult pubic lice or nits on his body. In the event of transmission of infection during sexual contacts, full history with regard to other STDs should be collected in detail, and

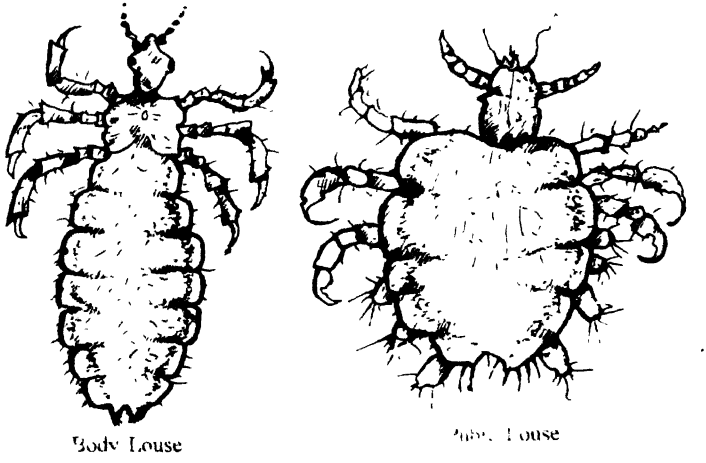


Fig. 27: Body louse and pubic louse

the patient and his sexual contact should be examined for the presence of any other STD. A blood test for detection of the syphilis should also be taken.

Treatment

The patient is advised to maintain personal hygiene and to insist on the same with his close sexual partners. One per cent gama benzene hexachloride lotion is applied on all the hairy areas, and rubbed upto the base of the hairs to take care of the adult lice The application can be repeated after seven days to take care of the nits which would have grown into adults during this period, the application of gama benzene hexachloride does not affect the nits, as it cannot penetrate its tough chitinous coat. If not objected to, pubic hair may be shaved for better exposure of lice to the thorough application All sexual partners should also be examined and treated for the lice and screened for any other STDs. Gama benzene hexachloride should not be used in pregnant women because of the danger of its contaminating breast milk.

* * *

CHAPTER 6

HIV DISEASE AND AIDS

Causative virus

A tiny virus, the existence of which was unknown till 1983, has created worldwide panic, similar to that of the bygone days of plague. People coined a new term 'love plague', because it killed people in large numbers as did plague and was thought to be caused by the sexual act. Further insights into the nature of the disease revealed that it is caused by a virus which produces immunodeficiency in humans; therefore, the virus was named human immunodeficiency virus (HIV). The invasion of human body by this virus occurs by the sexual route, through transfusion of HIV infected blood, needle sharing by the drug addicts who inject in groups or by the introduction of the virus in human beings accidentally

Once inside the body the virus multiplies in and damages the very cells which are responsible for fighting against the onslaughts of injurious organisms In the initial prolonged period of infection, ranging up to 10-15 years, the infected individuals though outwardly healthy and symptom-free, carry the virus in the cells. Such an individual is capable of infecting other healthy individuals through sexual contact, donation of HIV infected blood and other routes This stage is called 'HIV disease'

Destruction of an increasing number of 'helper T cells', the cells responsible to combat infections and boost body resistance results in immunodeficiency. Three types of immunodeficiencies are known . (i) genetic or hereditary deficiency passed on from parents to newborns in the form of a defective gene; (ii) immunodeficiency induced introduced into the body by a group of drugs called immunosuppressive drugs which are given in many

autoimmune diseases and in cases of organ transplant to prevent rejection by the recipient (iii) acquired immunodeficiency due to HIV virus infection.

The prolonged symptom-free state in infected individual is followed by a group of symptoms due to loss of resistance. These symptoms are unrelated to each other and cannot be ascribed to the involvement of any one organ or system but point to multiple organ-system involvement and are therefore designated as a *syndrome*. This gives the late clinical stage of HIV infection the name *acquired immunodeficiency syndrome (AIDS)* AIDS is the final full blown picture of the disease. Overwhelming of the body system by the virus results in the production of many opportunistic infections and cancers, ultimately ending in the patient's death.

Historical overview

An abnormal rise in the number of patients suffering from infections of the chest like pneumonia due to *Pneumocystis carinii*, a fungus and a skin cancer in 1981 in Los Angeles in USA drew attention to this new infection. Interestingly all these cases of infections were found in young men who were homosexuals. Close on its heels a large number of Hispanic youths, both homosexuals and drug addicts, were found to be afflicted with a similar ailment. There was a deficiency of cells responsible for fighting infections in the body, i e., helper lymphocytes, causing these patients to suffer multiple trivial infections which usually do not harm normal individuals. Two years of debate and intensive laboratory investigations in the search for the causative factor resulted in the isolation of a hitherto unknown and new virus in 1983 by two groups of scientists simultaneously, but independently, Luc Montaigner from the Pasteur Institute in Paris, France, and Robert Gallo from the National Institute of Health in Bethesda, USA.

Of greatest interest was the question as to how the new virus developed, whether as a mutation of the existing harmless viruses or as a completely new entity Meanwhile a large number of deaths in Central Africa from locally prevalent infections like tuberculosis and other parasites, causing entire villages to be wiped out, forced the scientists to investigate its causes. To their utter surprise they found that the HIV virus was widely present in this population group as well

Of late the HIV infection has spread globally and is now invading Asia in a big way (Fig. 28) Over 80 per cent of all HIV infected individuals live in developing countries and in Asia the largest number, about 3 million, are in India, Thailand and Myanmar (Table 2)

Table 2. AIDS and HIV Infections in South East Asian Region (SEAR) Countries as of 1st January 1996

Country	Reported AIDS Cases	Estimated HIV Infections
Bangladesh	7	20,000
Bhutan	0	75
DPR Korea	0	100
India	2095	1,750,000
Indonesia	82	95000
Maldives	5	60
Myanmar	570	350,000
Nepal	48	5,000
Sri Lanka	52	6,000
Thailand	22,135	700,00
Total	24,994	2,800,000

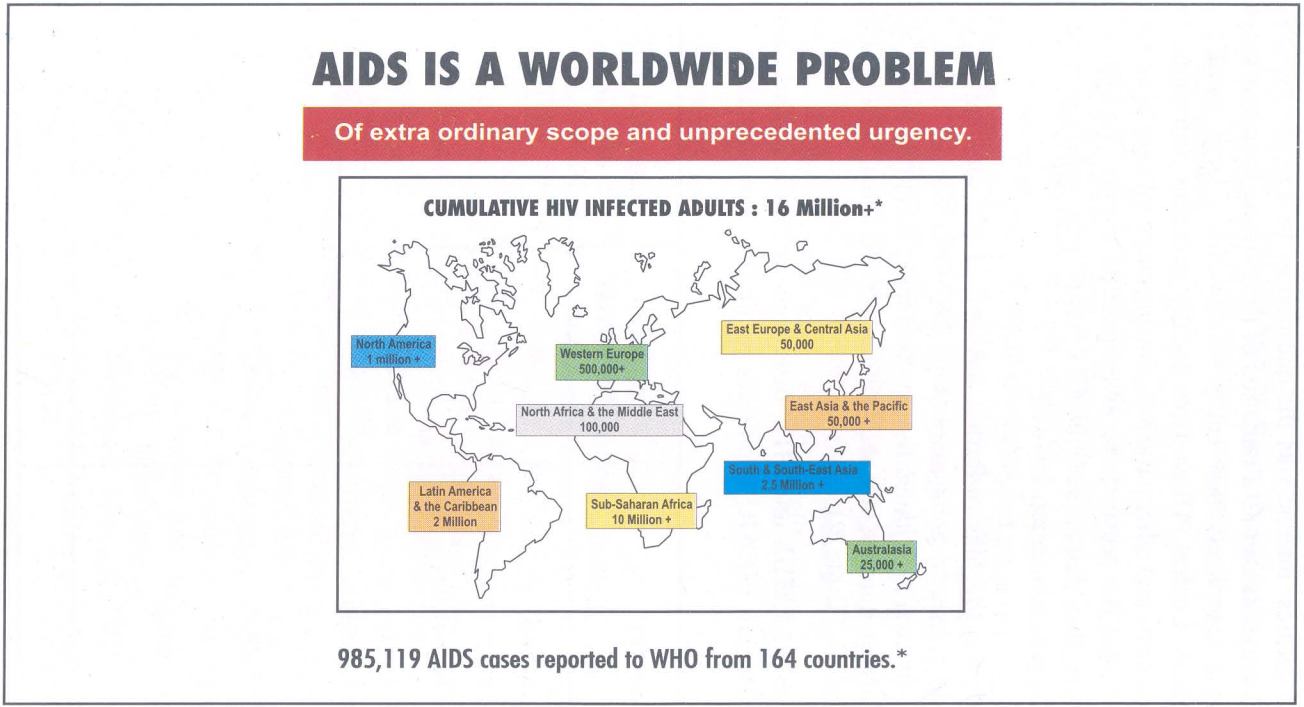


Fig. 28: Global distribution of HIV disease

Source: WHO, January 1995

The Indian scene

The disturbing fact is that in India HIV is spreading at a furious pace. Bombay prostitutes have registered a twenty fold increase during the past seven years. This is perhaps the most rapid rate of increase and spread of HIV seen anywhere in the world. In the context of a large population of 900 million, it is all the more alarming. The World Health Organisation estimates are that by 1996 there will be 2 to 3 million HIV infected individuals and 179,000 confirmed cases of AIDS in India with a remarkable potential for transmission of HIV. The scourge has spread from homosexuals to those practising heterosexual relationships, a large number of needle sharing drug addicts and infected pregnant mothers and their unborn or newborn children This poses a major threat to the economically productive young human population and their ultimate existence In the context of underdevelopment and poor socio-economic conditions in these regions, the situation becomes even more grave. Interestingly the epidemic in the continents of the origin of the disease is getting under control and is even on the decline but in the underdeveloped countries of Africa and Asia it continues to be on the increase (Fig 29)

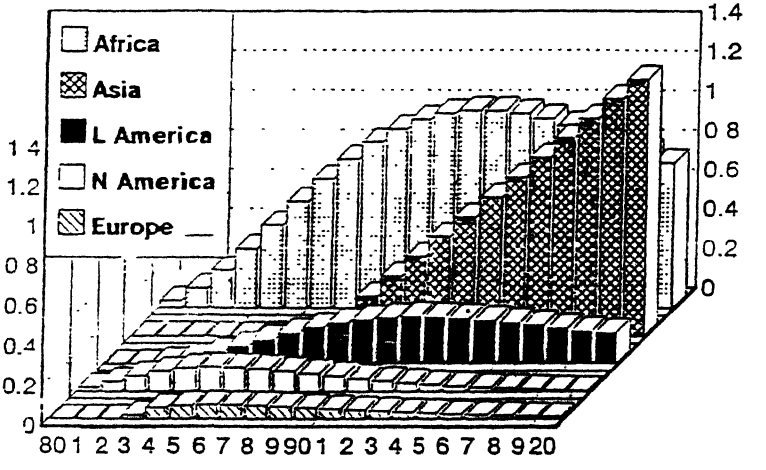


Fig. 29: WHO projection of HIV cases on various countries

In India the first noises about HIV/AIDS were made in 1986. Since then the Government of India has established the National AIDS Control Organisation (NACO) in 1990 under the charge of an officer of the level of an Additional Secretary. It has set up 62 surveillance centres located in medical colleges and 150 zonal blood testing centres (ZBTC) in all the major cities to ensure HIV-free blood supply to the needy patients throughout the country.

The Virus

Viruses are the tiniest of the germs known to mankind and are incapable of surviving outside any living system This is because they contain only one type of nucleic acid, either DNA or RNA, and normally both are required for a self-sustaining life. Thus they are inherently parasitic, deriving their nutrition from living cells and having to find a host for their multiplication

HIV belongs to the family Retroviridae. The word 'retro' means 'backwards', implying that these viruses, which contain only RNA by virtue of a unique enzyme, 'reverse transcriptase' convert the RNA into DNA, biologically a backward step that earns the virus the name retrovirus The virus particle (Fig 30) is a sphere covered by a membrane made up of two layers of fatty material. This membrane is studded with small protein and sugar molecules that resemble umbrella like structures It is these structures which help the virus to get a firm hold on the cells of the infected individual The core of the virus contains the nucleic acid (RNA) and the enzyme reverse transcriptase

Modes of spread of HIV infection

The virus enters the body through three main routes (Fig. 31) .

1. ***Sexual*** : The sexual route is the predominant one and

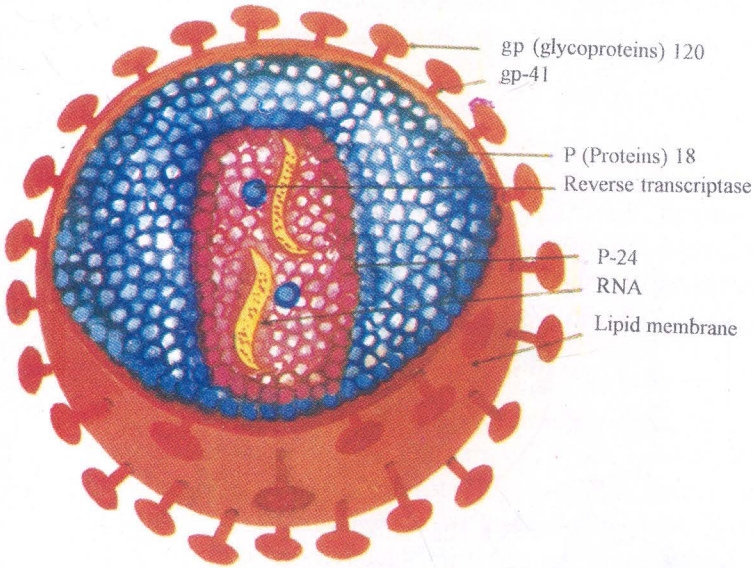


Fig. 30: HIV Virus: Schematic presentation

includes both heterosexual and homosexual persons, the former being the main route of infection in India.

2. ***Blood transfusion and Intravenous drug users*** : Infection can also spread through transfusion of infected blood as well as blood product as also by the use of infected or poorly sterilised needles, syringes and other instruments.

3. ***Mother to newborn*** : Infection can also be transmitted from an infected pregnant woman to her unborn or newborn child. In the case of infected mothers, there is also the possibility of breast milk infecting the child during the first few months of birth.

In India all the patterns of HIV transmission are prevalent.

Fig. 31: Routes of entry of HIV

In this context it is very important to emphasise that the virus is not spread by insects, sharing food with infected individuals, their bedding, clothing, and social acts like hugging, kissing and shaking hands with them

Natural history of the disease

This refers to how an organism enters the host, produces the symptoms of infection and seals its ultimate fate Infection with HIV produces a very varied and wide-ranging picture that can be classified into three stages as the infection gains a foothold

1. *Stage of acute infection* : Approximately three to six weeks after exposure to the virus, 10 per cent to 15 per cent of the individuals develop an acute, flu-like illness Symptoms of fever, sore throat, generalised lymph node swellings, body aches and joint pains are present These last for a week, just like the flu illness, and may be commonly mistaken for other viral illnesses At other times these symptoms may be so transient that many may not even be able to vividly recall and pin point their duration What is really happening is that during this stage there is an attempt on the part of the body to prevent the invasion of the virus by mounting an immune response The immune system produces substances called *antibodies* in order to check the spread of the virus (Fig 32) Till this period it is very difficult to detect the virus by the commonly used laboratory tests Therefore it is also termed as the *'window period'*

2. ***Asymptomatic stage*** : All through this longest stage of infection patients remain healthy with no signs and symptoms of illness. However, being a virus carrier, he can infect his/her close contacts through unprotected sex, infected blood donation, needle sharing in cases of drug addiction, or accidental injuries. Some patients pass

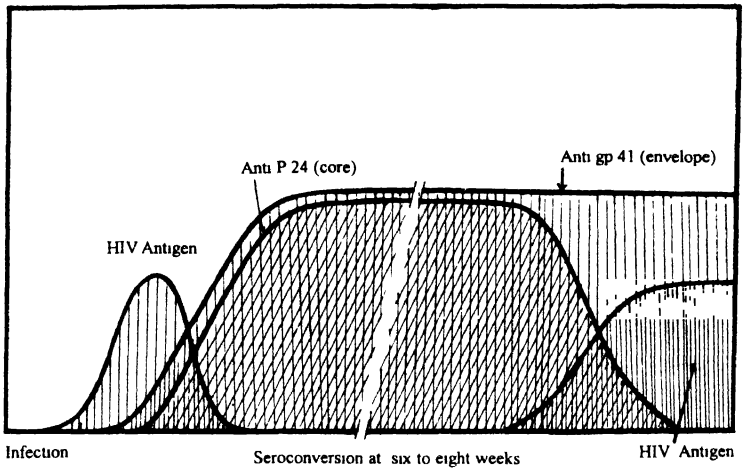


Fig. 32: Window period and HIV antibodies

through a stage of generalised swelling of the lymph nodes There is an enlargement of the lymph glands at two additional sites besides the groins The glands exceed 1 cm in diameter Except for this defensive reaction to the presence of HIV infection, there are no other symptoms This stage, called *persistent generalised lymphadenopathy* (PGL), is to be differentiated from other similar conditions and needs to be further confirmed by the HIV Elisa or any other confirmatory test

3. ***Early clinical stage*** : During this period the infected person shows some initial signs of the disease These usually manifest themselves within some years of acquiring the infection and can only be suspected Certain innocuous viral, bacterial, parasitic and fungal infections, which are usually self-limiting or easily treatable in humans, appear in a virulent form. Due to knocking down of the immune mechanism they become life threatening (Fig. 33). In a developing country like India, with poor nutrition and a high incidence of infectious diseases many

other causes of these signs and symptoms have to be first excluded For instance, cold sores due to the herpes virus which appear at the angles of the mouth, are very common and disappear without treatment. But in the presence of HIV infection they may become large and cause non-healing raw areas

4. ***The late clinical stage*** : This is the stage of full-blown AIDS The main complications seen in this stage are .

   a Opportunistic infections by a wide variety of organisms The resistance of the individual is so poor that many infective agents which do not harm normal persons cause life-threatening diseases by taking advantage of the weakened defences of the body Hence these infections are called *opportunistic infections* (OI)

   b Increased incidence of serious diseases, e g , tuberculosis and cancer The already high incidence

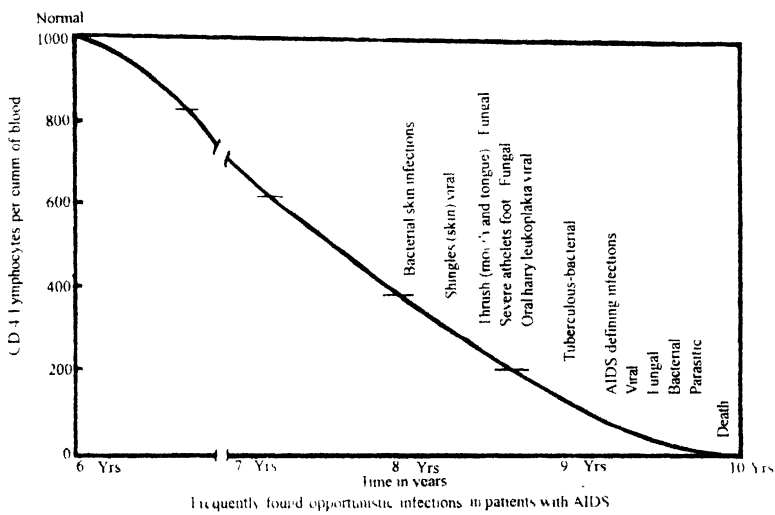


Fig. 33: T4 Cell Counts and HIV/AIDS

of tuberculosis in India will increase further, and in the presence of HIV infection it will become a multi-organ disease, causing widespread damage and resulting in high mortality. Among all the organs, the lungs are the most common site of infection by a number of organisms other than tuberculosis. The following common infections are increasingly seen in the lungs : tuberculosis, pneumocystis carinii, influenza and streptococcal infection. The symptoms are mainly that of breathlessness and at times there is productive sputum X-rays show the lungs to be riddled with areas of opacity denoting infection

Due to suppression of the immune system there is also an increased incidence of cancers in AIDS. This is because the abnormal proliferation of cells is unchecked. The most frequently seen cancer is Kapsi's sarcoma, which appears as red nodules on the skin of affected individuals. In addition, tumours affecting the lymph glands are also common.

HIV infected children develop numerous bacterial, parasitic and fungal infections. Here two patterns can be seen the infants may die before the first year of life or they may develop the disease later on, similar to that seen in adults.

HIV and pregnancy

HIV infection in pregnant women can take place before, during or after delivery and therefore adequate preventive measures need to be taken throughout It is still not clear whether pregnancy hastens the progression of HIV related disease. Some data show that asymptomatic HIV positive women have delivered with no adverse effects. However, women who have advanced HIV infection or AIDS may have an increased risk of premature births or other adverse outcomes. The possibility of transmission of the infection via the placenta poses a significant problem. Observations have shown a transmission rate of 20 to 40 per cent for asymptomatic HIV positive women and higher rates

in those with advanced HIV infection. The women should be told about their HIV status and of the need to inform their partners. They should also be given the option of terminating the pregnancy to avoid the birth of HIV infected child.

During delivery precautions should be observed by the team engaged in conducting the delivery because maternal secretions contain the virus. The precautions include wearing of gloves, efficient disposal of products of conception, and proper sterilisation of all instruments used in the process. During the post-partum period, the most important question that faces the mother concerns breast feeding. Though in exceptional circumstances the virus can be transmitted through breast milk, the concentration of the virus is usually not adequate to cause infection in the infant. So the mother should breast feed the child in the larger interest of preventing undernourishment of the newborn

HIV infection in children

The most important fact to be ascertained when an HIV infected woman delivers a child is whether or not the infant is infected. This is because during the pregnancy period, i e , before child birth, antibodies from the mother pass into the child through the blood circulation Thus Elisa tests performed on the infant's blood are likely to be positive However, since these antibodies are not being produced by the infant's own immune system, they disappear in the course of the time which is usually 15 months from the date of the birth Consequently, only children who show positive tests after this period are considered to be infected The cause of the disease varies and depends on the nutritional status of the child Infants with poor health due to HIV infection survive for only three to four months while others develop signs and symptoms of AIDS after the age of two years and beyond. These are similar to those seen in adults. Lung infections are the most common and can lead to rapid deterioration in the general condition Malignancies are rare as compared to those seen in adults.

Antiviral therapy

The traditional treatment of patients with a viral disease consists of supportive and symptomatic therapy till the immune system becomes capable of coping with the invading virus. This approach is not operative in the case of HIV because the virus directly compromises the immune system. However, HIV is uniquely susceptible to attack at two points in its life cycle at the reverse transcription step when RNA is converted into DNA; and during proteolytic processing of viral proteins, which are essential for virus assembly. HIV reverse transcriptase and HIV protease are not found in uninfected cells

At present the anti-HIV agents available are *reverse transcriptase inhibitors* which affect HIV early in its life cycle (before DNA integration) and prevent the infection of susceptible cells. HIV protease inhibitors, the enzymes which affect HIV late in its life cycle and prevent the maturation of infectious virus particles, can complement reverse transcriptase inhibitors but they are yet to be developed

1. ***Drugs*** : Amongst the drugs inhibiting the reverse transcriptase enzyme, *zidovudine* has been extensively tried. The drug is given orally in a dose of 500-600 mg per day and is indicated for all HIV infected adults who have evidence of impaired immunity (CD4 cell counts 500/mm ^{3} or lower) whether or not they have symptoms pertaining to HIV disease.

Early therapy is central to treatment of the disease because it is likely to give long-term benefits if multiplication of the virus is interrupted in the initial phase Infection with HIV is now recognised as a chronic progressive viral infection that gradually erodes the cell-mediated immune system. The opportunistic infections and cancers represent the final stage of HIV disease. Early intervention to suppress HIV, when the immune system is still intact, is likely to stabilize or improve immune function.

Thus HIV infection needs to be seen in the same perspective as other chronic medical conditions like diabetes and hypertension.

Other di-deoxynucleosides active against HIV include *ddc (dideoxycytidine)* and *ddi (dideoxyinosine)* These have shown good activity against HIV and the dose of the drug required has been finalised. In future, zidovudine in combination with these drugs will improve the response and reduce toxicity of individual drugs.

2. ***Vaccine against HIV*** : Like any other vaccine, an AIDS vaccine must stimulate the immune system to produce antibodies that prevent the virus from binding to the host cell The first step in creating an AIDS vaccine is to identify the tiny site on the virus's surface that latches on to the host cell This is the surface protein from which the vaccine will ultimately be made

The fact that HIV mutates so rapidly within its host means that more than one vaccine will almost certainly be needed As a result of this genetic variation, many problems in development of vaccine can result This also explains why in other viruses like influenza a new vaccine has to be provided for each new outbreak because protection against any infection requires a vaccine prepared from a virus that exactly matches the virus to which the patient will be exposed

Several subtypes of HIV predominate in a particular area, and nine of these have been identified, e g , in Thailand the dominant subtype is E, in India it is C and in USA it is B

Till now all the experimental vaccines have failed to produce a strong immune response because of a large number of antibodies that are of no use in giving protection These are called weak or diversionary antibodies To make current vaccines effective, researchers must find ways to boost the immune response by eliminating those parts of the vaccine that generate

useless antibodies. This issue is being currently resolved by using genetic engineering techniques. These are helping scientists to create a molecule similar to the HIV antigen that preserves the protective component of the virus but eliminates the damaging ones. The first step then is to find out which components should be preserved and which deleted. Another method of improving vaccine efficacy is by the addition of adjuvants. Adjuvants are not particular to any vaccine and are used to enhance the effectiveness of a particular antigen. Taken together, these two innovations, i.e., a more effective adjuvant and the redesigned antigen, promise to boost significantly the level of immune protection provided by a particular vaccine. But to maximise protection against HIV, a variety of vaccines will still be needed, based on specific epidemiological variables that characterise HIV infection within different target populations.

Obstacles to prevention of HIV transmission

Many studies conducted to assess the situation with regard to obstacles in the prevention of HIV transmission have found the following .

- Most individuals do not have accurate and complete information about AIDS.
- The direct link between STDs and AIDS is not clear to most people.
- STDs are not perceived as serious conditions, since they are curable.
- There is a belief that HIV transmission and AIDS is only found in limited groups such as foreigners, homosexuals, prostitutes and drug users.
- There is an attitude that AIDS can't happen to me, and that in general AIDS is not a problem of major concern for India.

Control

The main elements of the strategy to control HIV are to.

- Prevent infection with HIV
- Reduce the personal and social impact of HIV infection
- Mobilise and unify national and international efforts against AIDS

Preventing HIV infection

Prevention against AIDS is the only way to avert all the human social and economic costs of HIV infection, which is lifelong in the absence of a curative drug and preventive vaccine

AIDS is essentially an STD, which like some other diseases in the group can also be spread through blood and from an infected woman to her unborn or newborn child

Prevention of sexual transmission of HIV can be through

- Frank information and education of all including women regarding the disease, not just people practising high-risk behaviour such as having multiple, casual sex partners
- Health and social services for detecting and treating STDs
- Supportive environment, including protective social norms like single, faithful marital partnership and condom usage.
- Prevention of stigmatisation and discrimination directed against people suffering from or suspected of HIV/AIDS.
- Eradication of poverty, because this leads to ills like
    - i People leaving the family behind in search of employment.
    - ii. People finding solace in drugs

iii Prostitution becoming a survival strategy for women and children.

Sexual transmission requires the active participation of both partners and this should be preventable by either one of them but this is not so in actual practice. Poverty, a low level of education, and subordinate social status leave women with little power to refuse intercourse or insist on the use of condoms This calls for social and economic empowerment as a long-term goal. Short-term achievable goals include (a) development of vaginally applied creams which can kill the virus, and (b) making available female condoms that can be controlled by women Recognising the highest incidence amongst young people, clear information in unambiguous language about HIV transmission should be targetted at pre-adolescent and adolescent girls and boys in schools and colleges and outside world

The best way to prevent HIV infection of the foetus and newborn is to prevent its transmission to women in the reproductive age group In the absence of this HIV infected women should avoid child bearing These women should be provided counselling, contraception, and family welfare advice to prevent the birth of HIV infected children

In health settings, all blood required for transfusion during surgery or in an emergency should be supplied as HIV free and so tested HIV - positive blood is now discarded All the necessary precautions for preventing transmission should be taken as a matter of routine when undertaking surgery or other procedures where contact with body fluids is feared. Drug addicts should be given extra care in order to wean them off the use of injectable psychoactive drugs They should be provided information and education on the dangers of HIV transmission through the use of shared or contaminated injection material, i.e., needles and syringes All necessary support is required to wean them away from the use of these drugs, boost their morale, and enable them to live without drug addiction and enjoy a more enlightened life.

* * *

CHAPTER 7

SEXUAL PROBLEMS

Human Psychology and Sex

Normal sexual functions culminating in sexual intercourse and a contented and satisfied sexual attitude are dependent on multiple components (Table 3)

Psychosexual problems are disorders where either the sexual function is disturbed as a result of psychic influence or there is aberration of psychic function as a result of sexual disturbance

People with the psychosexual problems do not suffer alone- their sexual or marital partners and parents also share their agony The patient feels distressed because he is unable to understand why this has happened to her/him especially when there is no obvious anatomical or physiological abnormality, and when many others in her/his circle of friends, relatives and colleagues seem to have happy, spontaneous and normal sexual relationships

In the marital relationship, sex is an essential feature of the bond between the couple In the South Asian setting, prior to marriage, the woman probably has some vague idea from her close friends that she will be able to freely and happily enjoy marital sex When she finds this is not, she may express her sexual dissatisfaction through a host of physical symptoms like headache, backache, fatigue, painful menstrual periods, and psychic symptoms like irritability, anxiety, depression, hopelessness and helplessness. Parents of newly-married couples may be upset if they do not have grandchildren who they think will carry their traditions and family forward.

Patients suffering from psychosexual problems do not know whom to approach for help or where to go. They are shy and

Table 3. Psychological factors on which successful sexual intercourse depends

Factors	Effects
1 Age	Sexual desire and capacity decrease with age.
2 Sociocultural influences	Cultural norms of monogamy (one wife as marital partner), as in Hindu law, celibacy *(brahmcharya)* upto a certain age, and sanctions against extramarital intercourse
3 Drugs or alcohol	Drugs like steroids, antihypertensives taken for hypertension control, antidepressants and alcohol may cause diminution of the sex drive
4 Personality	Extroverts are more prone to casual sexual relationships.
5. Sexual preferences	Homosexuals have high rate of partner change.
6. Infatuation	Infatuation with a person or ideal role model may lead to sexual intercourse.
7 Unusual settings/ occasions	Holidays, social or business meetings of long duration with an opportunity to meet persons and develop acquaintances may lead to casual intercourse.
8. Psychiatric diseases	Depression-decreased sexual activity; Hypomonia-increased sexual activity.

at times so are their doctors who are reluctant to give them a listening ear, or simply dismiss their problems as of no consequence. As a result such patients end up in hands of quacks who exploit their helplessness and extract money, without helping them to deal with these problems, leave alone curing them successfully. The physician handling these problems should not only be sympathetic, knowledgeable, he should have the correct attitude and skills to help such patients

Successful sexual intercourse to the satisfaction of both the partners is influenced by the psychological factors at work in both Promiscuous sexual relationships, fear and apprehension or actual acquisition of sexually transmitted diseases, and their long-term complications, chances of recurrences, and infectivity to sexual partners can all interfere with satisfactory sexual intercourse

Except for rape, acquisition of STDs can be considered to be the result of a more or less conscious decision taken before physical contact Various factors contribute to the decision as to whether or not intercourse should take place

Normal sexual functions

Sexual arousability means the facility with which we respond to erotic stimuli It includes psychological arousal as well as erection of penis or increased blood flow to vagina. In both males and females sexual arousal is associated with increased testosterone levels in the blood. Diminished sexual arousability is manifested as female unresponsiveness or 'cold wife', and erectile impotence in men. Administration of androgen improves arousability. Masters and Johnson techniques adopted suitably can also help in such cases. Sexual function is the efficacy with which a desired sexual activity is carried out. Sexual dysfunction includes erectile failure (impotence) and premature and retarded ejaculation in the male, and orgasmic dysfunction, failure of lubrication of vagina and vaginismus in the female.

Stages in normal sexual response

In a normal response there are four stages.

1. ***Excitement Phase*** : Excitement is caused due to stimulation of sensuate areas. There are extragenital and genital sensate spots in both males and females, usually these are the areas with rich nerve supply. The extragenital sensate spots are the lips, nipples, breasts in women, pubic hairy area and the inner side of thighs The genital sensate spots are the sex organ, lips of labia majora, labia minora, clitoris, the outer part of the vagina The extrasensitive spots and the pleasurable sensation by a particular type of touch may vary individually The couple learn it by experience

2. ***Plateau phase*** : During this phase the heart rate increases Diastolic blood pressure rises by 10 to 20 mm mercury The respiratory rate also accelerates and there may be sweating

3. ***Orgasmic phase*** : In this phase, climax or satisfaction is reached. In the males it coincides with ejaculation of semen

4. ***Resolution phase*** : Signs of excitement regress and the person feels contented, gratified and tired The erection of the penis and engorgement of female genitals begin to decline

Anatomy and physiology of intercourse in male

Erection : This is caused by vasodilation due to parasympathetic activity from the second, third and fourth sacral segments The afferent impulses from the glans reach the sacral segment by

way of the internal pudendal nerve. Efferent impulses cause contraction of periurethral muscles with resultant compression of the venous channel drainage of the penis Blood is thus trapped in the penis shaft, it becomes firm and erection results.

Emission : This occures due to the contraction of the vas deferens as a result of sympathetic activity from thoraco-lumbar segments.

Ejaculation : This consists of the throwing out of semen in spurts into the vagina due to contraction of periurethral muscles of the penis

Classification of psychosexual problems and disorders

Psychosexual problems and disorders can be due to

- Problems related to sexual activity and its successful performance
- Primary psychiatric disease states
- Disorders secondary to STDs

Problems related to sexual activity and its successful performance

Some common sexual dysfunctions/problems faced by young people are discussed below.

Psychosexual disorders in males

Impotence : The literal meaning of the word 'impotence' is want of strength or power, the inability or weakness, helplessness It is the counterpart of the word frigidity or cold used in cases of women. These words are considered derogatory

therefore scientists now prefer to use more appropriate terms like 'erectile dysfunction', 'erectile problems' and 'impaired erection' as alternatives. Many men, as many as 50 per cent have such physical abnormalities, which are the causative factors involving vascular or nerve supply of the penis In others it may be of functional or psychogenic in origin and needs to be handled as such. the treating physician carefully explains the nature of the ailment to the patient's sexual partner and suggest the corrective measures and steps to be taken by both, like the Masters Johnson Technique.

A diminished appetite for sex is associated with advancing age The sex drive in the male is at its peak between the age of 15 and 35 years, whereas in females it peaks between 25 and 35 years. At the age of 70 years, 50 per cent of the male population is impotent, therefore biological impotence progressively increases A tired and busy man preoccupied with problems, shows declining sexual activity (barrister's impotence) Latent homosexuality, loss of interest in the partner, depression are some other causes Tumors of cauda-equina and drugs like corticosteroids, anti-hypertensives and anti-depressants can also result in diminished sexual behaviour

Modified Masters and Johnson Technique : After ruling out the organic and severe psychiatric causes of sexual dysfunction, the patient's problem is discussed in the presence of the spouse For the first two or three sessions an attempt is made to explain to the couple the nature of the problem. They are then asked to touch each others body parts, except sex organs, to find sensitive spots, as well as the type of touch which gives the other pleasure. After practising this sensate focus technique for a few days, when they feel the attraction between them, they are directed to touch each other's sex organs and find out the genital sensate focus, so as to stimulate each other sexually. When both of them have learnt to arouse each other for two or three days consequently, the couple should attempt the sexual

intercourse with the female in the superior position In cases of functional impotence, if this is successful for two or three days, then sexual intercourse in the normal position, i e , with the man on the top, can be started

This technique, if explained properly by a competent and experienced physician and practiced by the couple in stages as briefly outlined above, can be greatly advantageous without taking recourse to unnecessary medications.

Dhat syndrome : In normal, healthy males no drops of semen appear at the mouth of the urinary passage of penis except as a part of sexual excitement and intercourse However, in some young men drops of whitish, sticky fluid are almost regularly seen at this site at the time of passing urine or stools This problem becomes still more acute if the stool passed are hard and individual remains constipated This is popularly known as 'dhat syndrome' (The word dhat means semen) In Western literature this is also described as the *Bangladeshi syndrome,* because it is seen in people of Bangladeshi origin living in UK/ USA for a long time away their spouses Peculiarly, Westerners do not complain of any such ailment, and it does not find mention in their medical literature

These young men also complain of weakness, dizziness, and a lack of desire to work to their full capacity apart from the flow of sticky fluid In some people the symptoms are exaggerated after taking alcohol, hot or spicy food, tea, coffee, etc Many of these patients give, history of excessive masturbation or visits to brothels as an explanation Quite a few of them are anxious, poorly nourished belong to the poor socio-economic strata of society, and live away from their homes and spouses under economic compulsions in pursuit of their vocations and jobs. The sticky, whitish fluid secreted at the urinary meatus on the slightest emotional provocation, even, say, at the site of a beautiful girl. touching or getting touched by a woman's clothes or body while

travelling by pubic transport-has a different consistency and composition than that of semen. Most of the time it does not contain any spermatozoa. Probably, the fluid is the secretion from the engorged Cowper's and prostrate glands which gets precipitated by sexual stimulation or due to pressure on the prostrate from a loaded colon/rectum or a full bladder.

These individuals need to be explained that the sticky discharge is not semen but a secretion from the glands, which normally occurs before the sexual act to keep the passage lubricated for the easy flow of seminal fluid It is not serious as there is no wastage of the precious fluid. The individual should keep himself relaxed and take nutritious diet, avoiding spicy food and constipation With improvement in the general health, the tone of the urethral and pelvic muscles will improve and the drops of prostatic fluid at the urinary passage will also disappear.

Nightfall or nocturnal emission : This disorder is also peculiar to Asians and not complained of by the westerners It is popularly termed as *'swapna dosh'* (wet dreams) There is spontaneous emission of semen during sleep The frequency of these occurrences can be from two to three times a week to once a month It is most commonly seen in young, unmarried males Usually nightfall occurs at night when the person is fast asleep His sleep is disturbed with the unconscious gushing of semen and the wetting of clothes and undergarments But many people have vivid dreams of being in close contact with girls or of engaging in sexual intercourse before nightfall actually occurs This type of nightfall is of no consequence and the patient does not need any specific therapy except reassurance and an adequate explanation He should be made to understand that the formation of semen is a continuous process and that whenever the body produces in excess of its requirement, the semen is to be emitted In the absence of normal outlet during sexual intercourse or masturbation, it flows out while thinking and dreaming about his sweetheart.

In some instances, the spontaneous discharge of semen occurs during daytime when the patient is awake and comes in close contact with the women/girls in public places like cinema halls, classroom, office etc., or in public transport, like buses and trains. Sometimes this may be socially embarrassing and even interfere with their livelihood For example, a young unemployed graduate who earns his living by giving private tuitions finds life very difficult as he gets spontaneous emission each time he comes in close contact with his girl pupils This is probably due to the overactivation of the sympathetic nervous system Melleril (thioridazine) or Larpose (lorazepum) can help these patients to control and regulate their spontaneous emissions.

Masturbation : Masturbation is process of triggering an orgasm by the manual or mechanical stimulation of external genitalia It is practised universally by all teenagers before marriage or before an opportunity for genital heterosexual intercourse as a substitute for sexual intercourse Even after marriage it is occasionally practised to relieve tension when the partner is away or as sexual foreplay and variation by the female partner on her male consort During the act the man usually fixes his imagination on some sexual fantasy or real life situation Masturbation in such circumstances is not abnormal behaviour. But according to socio-cultural orthodoxy, masturbation is discouraged and regarded as undesirable on the ground that it damages the physical and mental health of a person. There is a false belief that a large quantity of blood is required to be condensed to from a drop of semen, therefore, it should not be allowed to be wasted by masturbation. Preservation of semen is life and its dropping out is death (fall of a drop of semen brings death) This is utterly untrue. When a weak willed person tries to suppress his sex urge according to social directives and accepted norms he is put into a conflicting situation in which he feels tense, is not able to sleep properly, and becomes preoccupied with sexual fantasies These people should be helped by being given a clear insight into the biological nature of masturbation

Sometimes, however, persons can get habituated to the practice of masturbation, it becoming almost an obsession. Masturbation in public or as a sole substitute for a heterosexual relationship even after marriage should be considered as abnormal behaviour. It prevents the development of a normal, mature, stable, confident and self-reliant personality. Such people should be advised and persuaded to stop excessive masturbation and revert back to normal heterosexual practice.

Premature ejaculation or ejaculatio precox : In this condition the man ejaculates too early at the time of penetration of penis into the vagina or soon after penetration thereby not allowing the female partner to reach a climax in the majority of intercourse experiences Premature ejaculation may be termed as, 'early orgasm', there is a gap between the person's expectations and his performance.

In some instances, factors like being a novice and inexperienced at sexual intercourse, or anxiety due to social and inhibitory factors-fear of being seen in a compromising position by some body or being blamed by the partner for unsatisfactory sexual performance may lead to premature ejaculation. At other times abstinence for a long duration, deterioration of interpersonal relationship between sexual partners, or organic diseases like diabetes mellitus, nervous system disorders, or diseases of genito-urinary system may also be responsible for an early orgasmic response in males.

The condition is managed by an understanding of and mastering control over the ejaculatory stage by withholding by before the stage of ejaculation sets in, give a long enough pause and restart the act, in cycles. Thus premature ejaculation can be prevented. Another simple technique which can be practiced by the couple is to withdraw before the ejaculation stage, and squeeze for 3-4 seconds with the thumb at the frenulum and the index and middle fingers on coronal ridge

(Fig. 34) to facilitate withdrawal of engorged blood in penis, and restart the act after a short pause. Premature ejaculation can be managed by cooperation and understanding between the two partners with regard to the act

This condition can also be improved by cutting off the sympathetic drive due to over-excitement and thereby delaying the compression of vas deferens with drugs like larpose and lomipramine under the doctor's advice and as per his guidance. A modified version of the Masers and Johnson technique can also be adopted by the couple in such cases

Gender identity : It refers to people, views about themselves as male, female or ambivalent. *Transvestites* experience the urge like members of the opposite sex, for example a boy preferring to wear clothes worn by girls. *Transsexuals* think that their soul has been put in the body of the wrong sex This is inborn and cannot be influenced by treatment The current day treatment modalities can only help the patient to modify his body according to his psychic make-up

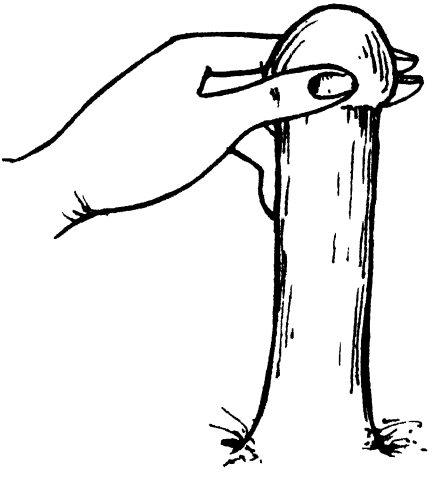


Fig. 34: Squeeze technique

Sexual preference : Attraction between members of the same or opposite sex is constitutional. While most of the population is heterosexual, a socially acceptable practice, a small percentage is homosexual, whose orientation is difficult to change

Fetishism : In this condition a person is dependent on a fetish object of his fancy, which may be dress material or a part of the body, to obtain erotic arousal and achieve orgasm.

Habitual masturbation : Certain individuals compulsively indulge in overmasturbation

Oral sex : The practice of mouth-to-genital sex instead of normal genital-to-genital intercourse.

The above conditions are not amenable to drug therapy and need counselling

Psychosexual disorders in females

Vaginismus : In this condition there is a spasm in the outer one-third of the vagina during or even in an attempt at sexual intercourse, with the result that the male is not able to introduce his erect penis into the vagina and no consummation of marriage takes place in the case of married partners These cases on psychological evaluation reveal a deep sense of fear due to previous unpleasant experience, like attempted rape or faulty sexual attitudes They can be helped greatly by understanding their psyche A tender touch, agreeable gesture and patience on the part of the husband can relieve the spasm with great satisfaction to both partners.

Dyspareunia : It is characterised by complaints of pain by women on thrusting of the penis in the vagina. Many anxiety arousing situations can provoke it But organic factors like a thick unruptured hymen, congenital malformations of the vulva or vagina, scar tissue following operation, or in the menopausal

age atrophic vulvo-vaginitis, can also bring it on. Pelvic inflammatory diseases, endometriosis, and a short vagina following vaginal reconstructive surgery could be some of the other reasons for dyspareunia.

Frigidity : In this condition the woman appears to be disinterested in the sexual act She makes her thighs and genitalia rigid with the result, penetration of the penis in the vagina becomes difficult Sometimes this can also be due to ignorance and the unfounded fear that her vagina is too small to admit a stout and long penis inside her, but this is not so, because the vaginal wall has great elasticity Certain genital diseases like vaginitis, and pelvic infections which cause pain at the time of coitus may also result in frigidity in women The exact cause could be carefully assessed If there are unfounded fears they should be allayed, and in the case of any organic disease, treatment should be given

Primary psychiatric disease states

Venerophobia : A majority of patients attending STD clinics/ centres or visiting doctors for management of their STD are worried about having had an infection after a sexual contact Some patients with anxiety and neurotic depression have persistent fears that they continue to suffer from the disease, specially if it is syphilis, gonorrhoea or primary herpes genitalis--even after being told by the doctor that they have been successfully cured by the treatment received In such cases, the fear of disease is usually dispelled when they discuss their problem at length with the treating doctor and get convinced about their being completely treated. But their fears and anxiety return back quickly Venerophobia can be best managed by behaviour therapy and anxiolytic drugs like tricyclic anti-depressants.

Delusion : A psychiatric disorder seen in schizophrenia and psychotic depression. In this case the patient has a fixed false

conviction that he is suffering from a STD For example, in a treated case of syphilis, he believes that his complaints of forgetfulness and headache are due to his suffering from neurosyphils, even though he has been adequately treated. Similarly people who have a sexual exposure to a suspected HIV positive case, get it into their heads that they have acquired AIDS even though they have tested negative for HIV. Their wrong beliefs are not altered by discussions with the doctor and his detailed explanations that they are not suffering from any such disease or HIV positivity and that there is in no danger of their sexual partners getting infected. Such cases should be referred to psychiatrists for their management.

Psychosexual disorders secondary to STDs

Syphilis : Given the capacity of syphilis to involve multiple organs and body systems carrying its damage to the heart, large vessels, nervous system, skin and bones even decades after the first infection the disease is considered worse than cancer, with damaging effects on the psyche as well. A young boy/girl presented with the stigmata of late congenital syphilis when comes to know that the condition is due to the syphilitic parents become deeply disturbed

Gonorrhoea and nongonococal urethritis : These days gonorrhoea as well as urethritis due to other causes is easily amenable to treatment It has a short incubation period, therefore chances of infecting regular or marital partners quickly and therefore the need for their simultaneous treatment make it obligatory that the patients divulge their disease, to their spouses and bring them under treatment simultaneously.

The infecting partner not only experiences a sense of guilt and shame but is under tremendous psychological pressure. Many a time advocacy of periods of abstinence also plays havoc with close marital relationships because the infected partner feels at

a loss to explain away the situation. A little understanding between the couple and joint counselling of the partners by the physician regarding the disease treatment and preventive care, including abstinence, etc., can improve the situation.

Leucorrhoea and genital discharges in females : Excessive vaginal discharges in women can be a cause of confusion, frustration and anger in sexual relationships. The exact cause of the discharge, some infection or otherwise, needs to be elicited and explained to the sexual partners. Many infective discharges, like trichomoniasis, anaerobic vaginosis and candidiasis may need treatment in both the partners simultaneously Genital candidiasis may be a chance discovery in a female partner who has some deep underlying psychosexual disorder, like vaginismus. The physician in this case instead of looking for some organic disease like diabetes mellitus, should concentrate on treating and handling the couple together regarding their psychosexual ailment. Genital discharges can lead to low backache, deep pelvic pain, dyspareunia, infertility or low fertility The doctor should see the couple together and explain and pinpoint the exact cause of the disorder. He should try to assuage their feelings of anger and resentment, build harmony and confidence between the couples and help establish a sound marital sexual relationship and confidence building in the couple.

Genital herpes : A patient with genital herpes in the primary stage, i.e , when it appears for its first time on his/her sexual organs may have a severe reaction at the site and disturbance of sexual relationship with his/her partner. But when she comes to know of the nature of ailment, how could it have been acquired, and the chances of its infecting his/her regular/marital sexual partner and the child they are expecting, there is sadness depression and anger about contracting the infection in the first place. The psychological make-up of the patient and any existing psychiatric illness at the time of the patient's acquiring the genital herpes decides the future course of recurrences. In patients with

previous psychiatric illness the recurrences are frequent. Lack of sleep, adverse life situations and the presence of the infection itself disturb sexual life to the extreme. The following statements of the patients suffering from herpes genitals (see box below) illustrate the point well

Number 1 : 20 year old girl, who was dating a great guy and having contracted herpes. She states, "I am so angry, I feel like screaming. I have stopped seeing him, but I am afraid to go out with anyone else I would rather die than give somebody what he gave me They say time will heal all I know in this case time will heal nothing I will carry the virus forever "

Number 2 : "I am 30 years old At the age of 22, I contracted herpes I became deeply depressed I felt ashamed, dirty, afraid that no decent man would ever want to have anything to do with me My physician advised counselling "

Herpes is traumatic but it need not ruin my life Within a year I met a man who did not care that I had herpes We learned how to deal with it together He gave me back my self-esteem

The statements above by two different patients suffering from herpes are very revealing Either like patient number 1, the individual suffering from herpes may become utterly depressed, or like the second patient, with proper advice and counselling may cheer up and start taking a proper perspective of the problem and the support and encouragement from his/her partner may learn how to deal with it and regain his/her self-esteem The treating physician needs to devote considerable time, be frank and sympathetic in his discussions and dispel the patient's unfounded beliefs about developing cancer, becoming infertile, aborting the child, not having stable sexual relationships, etc. With proper handling in the primary stage and during recurrences and psychological support, the disease can be managed well.

HIV disease : In view of its devastating effects and the non-availability of any curative antiviral drug, the mere thought of HIV positivity causes stress and anxiety, even before

the infection has been confirmed. Besides intensifying the health education campaign for the disease, there is a need to counsel patients who are in high-risk groups and have history of a doubtful sexual exposure before a HIV antibody test is undertaken. In these counselling sessions all the important issues need to be discussed in an unimpassioned manner and objectively.

Important issues to be taken up by the counsellor before a HIV antibody test is undertaken are:

- General information about HIV disease
- Implications of a positive test
- Significance or otherwise of a negative test
- Confidentiality of the test in respect of the individual tested
- Guidance with regard to handling of mental stress about the test
- Social difficulties and problems that may be encountered in case the result is positive

In case of a negative result, issues such as the likelihood of its being negative during the window period In cases of people practising high-risk behaviour, the need for repeating the test and change of life-style in sexual matters needs to be discussed and emphasised. With people who test positive, the physician needs to handle their shock and depression symptoms first and discuss about HIV disease only once their mental state has improved In spite of pre-test counselling and advice about 50 per cent develop symptoms of anxiety, depression, fatigue and feelings of hopelessness, overlapping with those of dementia A gloomy outlook of life, forthcoming financial difficulties, and imminent death due to AIDS underlie the depression

Sex being one of the most important dimension of every human being's life, problems related to sexual activity and its unsuccessful

performance, like premature ejaculation, impotence, dhat syndrome, etc., or primary psychiatric disease states, like delusions and venerophobia, can be really traumatic for the individual as well as his/her sexual partner. The acquisition of STDs, usually though a fully conscious act and decision with regard to sexual activity, bring in its wake psychological problems, both for the patients and to their nearest ones. The duty of the STD specialist or treating physician does not end with the management of the organic disease. He needs to keep in mind the strong psychological fallout and make sincere attempt to treat the patient in totality, not only with regard to treatment of contacts but also the patient's deeper psyche.

* * *

CHAPTER 8

PREVENTION OF SEXUALLY TRANSMITTED DISEASES

Prevention of STDs is dependent on the individual and cannot be brought about by enforcing laws or punishing people engaging in sexual activities which may lead to STDs While on one hand many old STDs, e.g , syphilis, gonorrhoea, etc , have become amenable to treatment due to the availability of effective antibiotic therapy, the onset and recognition of 'new' viral STDs such as wart virus, herpes simplex virus, HIV infection and AIDS has made the problem worse. There is no cure for these viral STDs, at best they are treatable

The human sexually active population contains people indulging in indiscriminate sexual activities, clients of brothels, call-girls, street-walkers, drug abusers, prostitutes, pimps, child exploiters and abusers, readers/viewers of hard-core pornography and blue films, homosexuals, lesbians, etc. Since sexual activity is an individual and private behaviour it is hard to enforce laws in this sphere. Preventive measures are available for those who care enough about themselves and others whom they love, but they should be ready to use it every time they indulge in sexual behaviour which exposes them to the risk of contracting STDs

Aims of STD control

The main aims of STD control are .

- To interrupt the transmission of STDs.
- To prevent the development of STDs and their consequences like poor health, infertility, low backache in women, blindness in newborn babies and children, etc.

The prevention of STDs is based on .

- Reducing disease exposure by advising individuals at risk to avoid sexual contact with persons who have a high probability of being infected.
- Detection of infection in asymptomatic persons and in persons who are symptomatic but unlikely to seek diagnostic and treatment services This can be achieved by encouragement from their partners and health personnel in the matter of health seeking behaviour
- Effective diagnosis and treatment of persons who are infected and their symptomatic and asymptomatic contacts suffering from STDs
- Preventing infection by the use of condoms or other prophylactic barriers during sexual intercourse

Safe Sex

Except for abstinence (no sex) and faithful monogamous sexual relationship observed by both the partners meticulously (Fig 36) there is no absolute way for sexually active people to prevent the contraction of an STD The most important method of reducing the risk of acquiring an STD is by practising safe sex This includes the following care in the selection of sexual partners and in sexual practices

1 Anal intercourse is unhealthy, unhygienic and can transmit many STDs Avoid penile-anal and oral-anal contact and fingering in the anus The rectal mucosal surface is more delicate than that of the vaginal mucosa therefore ano-rectal intercourse may result in tears in the rectum more frequently than in vaginal intercourse. Avoiding oral-anal contact and fingering in the anus during sexual activity reduces the likelihood of these infections

2. Use condoms during sexual intercourse (Fig. 35)

3 Use antibiotics as a preventive measure after intercourse in case of fear of infection

4 Practice good hygiene, like washing the genitals properly during the bath Washing them with soap and water after the sexual act and passing urine may help in reducing the risk of STDs

The STDs can be controlled by

I. Disease detection

1. *Screening* : Ascertaining the probability of the disease in individuals not directly seeking health care can be achieved by screening for syphilis and HIV in selected groups in the community, e g , blood donors, industrial workers, highway truck drivers, migrant population, etc

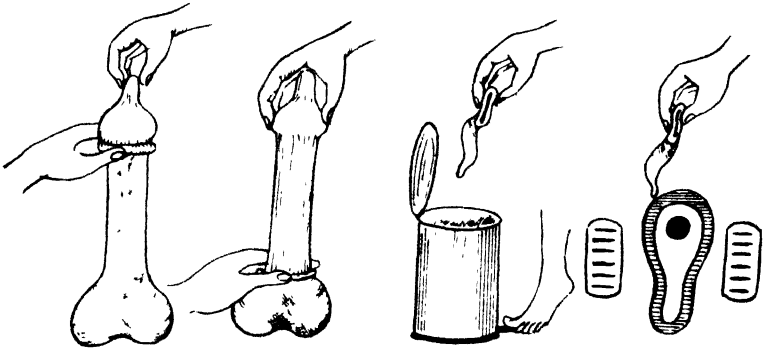


Fig. 35 : Correct method of condom use and disposal

2. ***Case finding*** : The use of clinical and laboratory tests in individuals seeking health care facilities for other ailments.

3. ***Diagnosis*** : Making proper diagnosis after a full clinical and laboratory evaluation in an individual case.

II. Treatment

The treatment advised should be able to cure the disease, have a high safety margin, i e., free from toxic and side-effects, inexpensive and easily available and have a convenient dose schedule, like a single dose taken orally or by injection

Health education provides key messages that are usually not very detailed and do not involve a discussion of the patient's own circumstances of sexual activities. The activities include

1. ***Information*** Providing knowledge of STDs in clear, unambiguous terms in order to create awareness in the community.

2. ***Education*** · Is meant to produce positive changes in attitudes to sex and health and health seeking behaviours in relation to STDs and their prevention.

3. ***Communication*** : This is aimed at increasing compliance with the clinician's advice and instructions on treatment, such as avoidance of re-exposure, condom usage, and bringing the sexual partner for examination and necessary treatment.

Health education on STD is based on the following principles :

1. Messages should be clear, accessible and appropriate to the audience.

2. Messages should not vary in content, particularly when a number of different media are used

Material and methods to be used for health education should be pretested on a pilot study group. Besides STD clinics, various hospital out-patient departments, maternal and child welfare centres, family welfare clinics, primary health centres and consultation chambers of private practitioners can be used as places for health education Health education can be disseminated through various media, such as

1. *Posters* are useful for clear, simple and short messages They are not suitable for providing detailed information Posters should not offend or embarrass the readers and should be appropriate to their setting

2. *Leaflets* can provide more detailed basic information and can be used for reinforcing information given during a consultation, e g , details of STD infections, guidelines for safer sex, etc

3. *Videos* not only have a greater impact, but can also provide more information than posters They can be followed up by discussions to clarify doubts in the mind of the viewers

III. Counselling

Counsellor can provide information, education and advice on STD, including HIV infection, without coercion or compulsions STD counselling is based on the following principles

1 Information on STD and HIV risk reduction should be easily available to all patients seeking STD services.

2 The counsellor should adopt a non-judgemental attitude in order to help the patient discover alternatives and make his own choices and decision.

3. The attempt should be to give detailed information on STD and HIV without making assumptions about how much patients know. If complete information is not given, the patient may feel shy or embarrassed to ask questions, e g., about particular sexual practices.

4. Periodic monitoring and evaluation are necessary to learn about the patients' feelings about health education and counselling This can also help in improving the counselling techniques and content.

5. Confidentiality must be assured and maintained at all levels.

In sharp contrast to health education, the patient should be counselled alone or when required along with the partner. The counsellor should be ready to devote adequate time to discuss sexual and STD related problems to their full satisfaction and in a completely unattached but straightforward manner

Counselling of STD patients

STD diagnosis and treatment can be undertaken from primary health care level to specialist STD centres by medical personnel who are equipped and trained in the diagnosis and management of these diseases The STD encountered may be a completely curable bacterial infection or a treatable but not curable viral infection The counsellor, who can be any person from a physician down to a paramedical worker, should explain the following to the patient in addition to risk reduction .

- The treatment
- The exact information as to whether the infection is completely curable , and if not so, its long-term effects
- Complications if any of the disease
- When the patient can resume the sexual activity

- Effect of the disease on fertility and pregnancy and the risk to newborn babies.
- The fact that the infection was caught from one partner and may already have been transmitted from the patient to his/her other sexual partners.
- Possibility of the infected partner from whom the infection might have been contracted and the partner to whom the patient might have transmitted the infection still being asymptomatic For example, in cases of gonorrhoea and non-gonococcal urethritis, the females may not have much of its symptoms though they will continue to remain infective to their sex partners
- Possibility of being reinfected in case sex is resumed with an untreated partner
- Complications and consequences for a partner if he/she fails to receive treatment
- The risk of other undiagnosed STDs including HIV infection in the patient
- Help in partner notification and bringing him/her under treatment by the index patient

Counselling and HIV testing : With the increasing incidence of HIV and AIDS disease and people being fed with information from various media sources more and more people, and specially sexually active groups and drug-abusers, are becoming anxious about their HIV status. Before undertaking HIV testing on demand from such individuals they should be counselled with regard to the outcome of the HIV report, and its rationale and post-test follow-up

1 The most important question is who is seeking the HIV test and with what expectations? The individual should understand that HIV testing is not a risk reduction measure per se The result should be interpreted according to the sexual behaviour pattern of the individual In a

high-risk behaviour individual, a negative test may mean either of the following.

a. The patient is uninfected by HIV so far

b. He may be in the sero-negative phase. In case of a confirmed history of sex with a HIV positive individual, the test needs to be repeated after an interval in the future. In either of the two situations, there is an imperative need to effect changes in sexual behaviour in such individuals Risk reduction information should always accompany pre, and post-test counselling.

2. Identification as HIV positive may lead to difficulties in obtaining medical care, danger of being thrown out by the employer or ineligibility for visa or work permit in case of employment seekers in foreign countries

3 Both negative and positive tests may affect the marital or other existing sexual relationships.

4 It is the responsibility of the counsellor to ensure that confidentiality with regard to the HIV test report is maintained at all costs

Prevention of STD and HIV by condom usage

In India condom usage was advocated as a means of family planning in couples who were not ready to opt for vasectomy or tubectomy. The popularly available condom or sheath in India is Nirodh The emergence of AIDS, for which as yet there is no cure and, which proves fatal within a period of 10-15 years, brought to fore the importance of wearing condoms as an effective physical barrier in individuals indulging in multiple partner sexual relationships.

Using a condom correctly is a skill which needs to be learnt

and practised. It is less stressful initially to practise using condoms when one is alone. Counsellors should demonstrate the procedure using a model of an erect penis or other suitably shaped, easily available article, such as a banana The person being instructed on condom usage might never have seen or touched a condom before He/she should be encouraged to touch and examine it and practise its usage before the counsellor As far as possible, information on condom usage should be accompanied by a pack of free condoms. Patients should also be given information with regard to various brands of condoms available in the market and their source of supply

Instructions for condom users

1 Open the packaged condom with care, avoid making small fingernail tears or breaks in the condom.

2 Hold half an inch of condom tip between your thumb and finger This is to allow space for semen after discharge

3 Pull the foreskin over the glans penis till the coronal pus.

4 Place the condom against the glans penis and unroll the condom down the penis shaft to the base of the penis

5 If the condom tears during intercourse, withdraw the penis immediately and put on a new condom

6 After discharge, hold the condom at the rim and withdraw the penis while it is still firm

7 Remove the condom carefully so that semen does not escape

8. Discard the condom into the toilet and flush

9. Wash your hands after use and disposal.

10. Never use a condom that is sticky, brittle or otherwise damaged.

11. Keep condoms away from excessive heat, light and moisture

In India condoms are available at chemists' shops and general merchants. The commonly available brands in the Indian market are : (a) Nirodh, (b) Adams, (c) Kohinoor, (d) Kamasutra, (e) Moods, (f) Durex, (g) Rakshak, (h) Passion, and (i) Masti.

If you have more than one partner, the other person may also have more than one partner and the risks of transmitting infection sexually multiply. Avoid sexual intercourse if either partner has STD symptoms, such as discharge from penis or vagina, or sore on genitals, or even a history of sexual exposure to a person suffering from STD symptoms.

Sexually transmitted diseases are a matter of personal responsibility and concern. You owe it to yourself, to those you love, and your children to be aware of the signs and symptoms of STDs and to avoid exposure. If you suspect that you have been exposed to an infected person, do not wait for serious symptoms. Do not try self-treatment, you need a doctor's help and guidance. Society's view of STDs should change from that of moral condemnation to concern for the elimination of STDs by ensuring suitable treatment and counselling facilities within the easy access of patients.

* * *

CHAPTER 9

LABORATORY DIAGNOSIS OF STDs

The care of patients with STD and HIV infection is provided by different levels of services, from specialised STD centres to specialists in Skin and STD out-patient departments of hospitals, primary health centres, general practitioners of modern and other systems of medicine, etc. The basic aim is twofold (a) rapid, inexpensive, simple and accurate diagnosis of the disease, and (b) inexpensive and effective treatment

The correct diagnosis of STD depends on the training and experience of the examining doctor and laboratory confirmation of the disease. The common presentations, like genital ulcer diseases, urethral and vaginal discharges, may have varied causative factors responsible for them Depending on the geographical situation and other risk factors, they may call for different and varied lines of treatment Few other disciplines of medicine require simple diagnostic laboratory techniques to confirm the clinical diagnosis before initiating treatment Simple laboratory test, like wet smear examination and simple staining procedures, supported by a microscopic examination, in the laboratory attached to doctor's examination room can in a reasonably short time confirm the clinical impression.

The laboratory diagnostic tests described here are easy to perform, not very expensive, and quick to give confirmatory diagnosis in a majority of the cases. In special cases, the help of specialised reference centres may be taken.

Tests included in this section do not require any special laboratory skills or sophisticated tools and gadgets but can confirm or rule out the clinical diagnosis to a large extent.

I. Direct microscopy without staining

Wet mounts

Used mainly for the diagnosis of trichomonasis, candidiasis and bacterial vaginosis

Preparation On a clean glass slide put a drop of normal saline* and place the discharge on it Put the cover slip and immediately examine under a low power microscope (x10) with low illumination

Trichomoniasis T vaginalis is recognised by the characteristic jerky movements of trichomoads These are clear, pear-shaped organisms of the size of a pus cell, with four anterior flagellae and an axostyle that traverses the body to end in a spine (Fig 36)

Bacterial Vaginosis is a replacement of normal lactobacilli of the vagina by a characteristic group of bacteria with changed properties of vaginal fluid It can be confirmed by

1 Sniff test Addition of one to two drops of 10 per cent potassium hydroxide to the vaginal discharge on the slide produces a typical fleshy odour due to the production of amines Other findings seen on gram staining in bacterial vaginosis are

2. Leukocyte count is normal The number of epithelial cells per microscopic field exceeds the number of WBCs

3. Epithelial cell line is indistinct and covered by coccobacilli all around, called 'clue cells'

---

* Normal saline can be prepared as
- Dissolve 8 5G of NaCl in approx. 900 ml of distilled water
- Make the volume to 1 litre by adding more water

4. Reduction in number of lactobacill in vaginal smear.

Candidiasis *Candida albicans* can be seen in a saline wet mount or better still in a 10 per cent KOH (which helps in breaking up clumps of epithelial cells) as small spores with budding and short hyphae (called pseudohyphae)

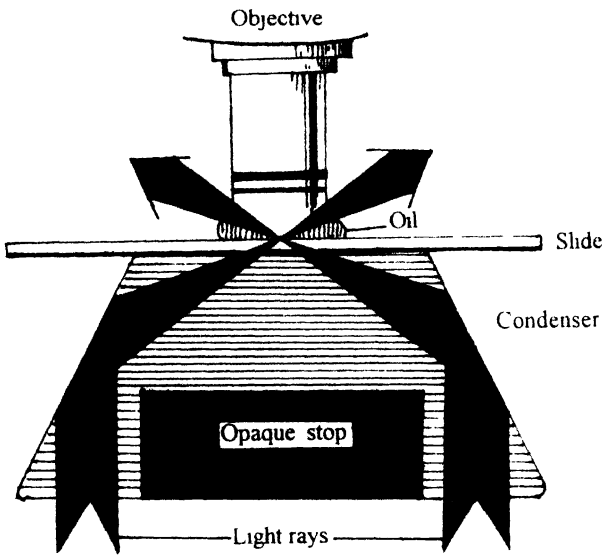


Fig. 36: Showing path of rays through the condenser in a dark ground microscope

II. Dark-field Microscopy

Dark field microscopy is the immediate confirmatory method for establishing the diagnosis in untreated primary and secondary syphilis by demonstrating its causative organisms, *Treponema pallidum* directly under the microscope

Principle In a dark field microscope, only light rays striking the organisms, or any other particles in the field, at an oblique angle enter the microscope objective (Fig 36), giving a self-illuminous brilliant appearance against a dark background to the

organisms and showing their movement. An ordinary light microscope can be converted into a dark field microscope by changing condenser to a special dark field one. Ideally one microscope in STD laboratory should be reserved for dark field examination only which should have a strong light source.

Method

1. The clear serous fluid from a suspected primary or erosive secondary syphilis lesion is collected on the margins of a cover slip, which is then gently slided over a clean thin glass slide (1mm thick)

2 The serum is evenly spread by applying gentle pressure on the cover slip, removing all the airspaces underneath

3. The margins of the coverslip are sealed by vaseline or paraffin wax to prevent evaporation of the fluid.

4 Examine under a dark field microscope immediately Put a drop of liquid paraffin on the dark field condenser at the top Touch the condenser to the undersurface of the glass slide. Focus the specimen under low power (10x), cut off extra light by adjusting the aperture of the condenser Focus under oil immersion

5 T pallidum are seen as closely and regularly coiled spirals of slow moving organisms of the size of a RBC (6-8U) The movements of propulsion and changes in shape, like angulation, buckling, undulation, and coil compression and expansion can be seen

Note :

1 Fusiform non-pathogenic treponemes sometimes seen in unclean ulcers are bigger in size with loose spirals and move fast across the field.

2. Any local application of antibiotic cream or systemic ingestion of antibiotics before the time of examination can make treponemes disappear completely even from a typical case of early syphilis.

3. In case no erosive mucous ano-genital lesion is present, skin rash of suspected secondary syphilis should be abraded to allow discharge of serum and examined.

4. In case of no mucous or skin lesions and only suspected lyphadenopathy, 0 1 ml of normal saline should be injected into the lymph node with a sharp needle on disposable syringe. Having massaged the lymph node, the fluid is aspirated and a drop put on the slide. After placing the cover slip, it is examined, as described for T pallidum

5. In case of failure to demonstrate T. pallidum, serological tests should be undertaken

III. Serological tests for syphilis

Two types of tests are available .

1 Non-treponemal or standard tests for syphilis (STS)
2 Treponemal or specific tests for syphilis

Non-treponemal or standard tests for syphilis are :

1. Rapid plasma reagin (RPR) card test.

2 Venereal disease research laboratory (VDRL) test.

Principle : This is based on the use of cardiolipin as an antigen It is thought that the antilipid lgG and lgM are formed in the host in response to lipidal material released from the damaged host cells early in the infection as well as to lipid from the cell surface of the treponeme.

Rapid Plasma Reagin (RPR) Card test

The rapid plasma reagin (RPR) card test can be performed, in a laboratory with a large number of specimens or under field conditions A detailed method of performing the test is given in each kit. The main steps of the test are:

1. Take one test card. Using a pipette, place 0 05 ml of unheated serum on one of the circles.
2. Spread the sample on the circle with the disposable plastic stirrer.
3. Gently shake the RPR card test antigen and put one drop (1/60)ml) in the serum sample on the circle
4. Rotate the card on the mechanical rotator after adjusting the speed The duration of the rotation should be as per the instruction with the kit
5. Remove the card from the rotator and see the results immediately with the naked eye in bright light
6. Reading Small to large clumps -- reactive, No clumps or slight roughness -- Non-reactive

Venereal Disease Research Laboratory Test (VDRL)

VDRL is the most widely used diagnostic test for the diagnosis of syphilis. For reading the result a microscope is needed The result is expressed as non-reactive or positive, which is expressed in various dilutions, e g , 1 1, 1·2, 1 4, 1·8, 1 16, 1 32, 1:64, etc, as per, the positivity of the patient's serum

Standard tests for syphilis described above, i.e., the RPR card and VDRL tests are dependent on group antigen, cardiolipin They are the best available tests for screening for syphilis, being cheap, quick and easy to perform at the periphery. But in low dilutions they can be positive in a lot of acute and chronic bacterial

and viral infections also. Therefore they need to be confirmed by the specific tests for syphilis to rule out treponemal or syphilis infection.

Treponemal or Specific tests for syphilis

Treponemal tests use T pallidum as an antigen Of all the tests the microhaemagglutination test for antibodies to T palidum, called TPHA, is easy to perform. Here the antigen is a suspension of formolised tanned sheep red cells sensitised with the ultrasonicate of virulent T pallidum Serum is added to an absorbing diluent to remove cross-reacting antibodies before the sensitized cells are introduced. A positive result is shown by the gradual agglutination of the senstised cells while the unsensitized cells in the control tube form a compact mass at the bottom

Treponemal or specific tests for syphilis, such as TPHA, are of importance in distinguishing and interpreting the results of standard tests for syphilis e g , VDRL, in doubtful cases Positivity of VDRL in low dilutions may be mistaken for a biological positivity in the absence of any evidence of syphilis, which can be confirmed by TPHA

IV. Direct microscopy with staining

A. Gram staining

Gram staining is a useful, simple and quick staining procedure to diagnose common bacterial STDs in the clinic with the laboratory facility of microscope The common STDs diagnosed by this method are

1. ***Gonorrhoea*** : *Neisseria gonorrhoeae* from a urethral, cervical, rectal or pharyngeal swab is seen as gram negative diplococci (cocci in groups of two's) in the neutrophils (Fig-20). In females the smear diagnosis must be confirmed by the culture of the organisms

2. ***Chancroid*** : *Haemophilius ducreyi* are seen as gram negative rods in chains (Fig.20). The material is taken from the margin of the ulcer on a cotton swab stick rolled on the slide 180 degrees in one direction. The characteristic morphology of the bacteria is not easy to demonstrate in smears

3. ***Bacterial vaginosis*** : Replacement of normal vaginal flora of lactobacillus -- gram positive rods with blunt ends by a large number of gram negative coccobacilli and clue cell.

4. ***Donovanosis*** : *Calymmatobacterium granulomatis* is a gram negative bacteria, 1.5 by 0 7 μm, seen in large tissue histiocytic cells and occasionally in polymorphs or plasma cells The characteristic cells are seen in tissue smears in giemsa stain

Reagents for Gram Staining :

Distilled water should preferably by used in the preparation of reagents

Crystal violet : (a) add 2 mg of crystal violet powder to 20 ml of ethyl alcohol, (b) add 0.8 mg of ammonium oxalate to 80 ml of distilled water. Mix (a) and (b) and filter

Iodine Solution : 2 gm of iodine is dissolved in 10 ml of NaOH solution Add 90 ml of water to increase solution to 100 ml

Decolourising solution : Acetone-ethyl alcohol in the ratio of 1.4 or 1·2

Counter-stain : Dissolve 1 gm of safranin in 20 ml of ethyl alcohol. Dilute 10 ml of this solution with 90 ml of distilled water.

Method

Fix the smear and allow to cool

1. ***Crystal violet – 1 minute*** : Pour the crystal violet on to the slide. Cover the slide completely Leave for one minute Rinse with tap water and drain

2. ***Gram-iodine Solution – 1 minute*** : Cover the slide completely with gram--iodine solution Leave for one minute Drain off the solution and rinse with tap water.

3. ***Decolourise with acetone ethyl alcohol*** : Decolourise till violet colour comes Rinse well with water and drain

4. ***Counter-stain with safranin solution – 15 seconds***: Leave on the slide for 15 seconds Wash with tap water at once Drained, allow to dry in air Drying may be speeded up by pressing a blotting paper against the slide Do not rub the stain off

B. Giemsa Staining

Giemsa staining is a simple staining procedure which is utilised in diagnosis of

Donovanosis : Tissue smears are prepared by taking a piece of tissue from the margin of granulomatous ulcers by a forceps and then breaking it into small pieces and rubbing on the slides The tissue smear can also by prepared by cutting a small piece of tissue from the ulcer and then smudging it between the two slides by a rotatory motion so that the tissue smear is obtained on both the slides Large mononuclear tissue histiocytes containing donovan bodies are looked for after staining (Fig 16)

Herpes genitalis : The smear is taken from the base of the tiny vesicles, after wiping off the fluid either by a loop or

swab stick and spread over the slide. Multinucleated giant cells are looked for as an indirect evidence of herpes virus proliferating in the cell nucleus, it being a DNA virus

Reagents

A stock solution is prepared containing

- Giemsa powder 1 gm
- Methyl alcohol 66 ml
- Glycerine 66 ml
- 0 5 ml of this stock solution is dissolved in 1 5 ml of methyl alcohol and 50 ml of distilled water

Method

1 Fix the smear by allowing it to dry

2 The smear is covered with (1 in 10 dilution) giemsa stain

3 The stain is allowed to stay for 10 minutes

4 It is then washed under running tap water and allowed to dry

5 The smear is examined under oil immersion.

In the presence of a large number of tissue histiocytes, a thorough search for donovan bodies in these cells should be made. Even in the expert hands, it takes 15-20 minutes to screen the slide, before ruling out the clinical diagnosis of donovanosis Donovan bodies appear as coccobacilli within the cytoplasm of the mononuclear cells, measuring 20-90μm in diameter. Early forms of donovan bodies appear purple while the mature forms are pink, resembling a closed safetypin in appearance.

C. Papanicolaou (PAP) smear

In this procedure of special staining, mucosal smear taken from

the genital surfaces are examined for the presence of abnormal cells These abnormal cells are indicative of likely cancerous changes in these organs. Minimal changes are seen in cervical warts, infections of non-gonococcal urethritis, candida infection, herpes genitalis, etc It is an important, simple test ruling out early cancerous changes in female patients suffering from STDs.

* * *

Treatment Guidelines of some important Sexually Transmitted Diseases

The treatment of some important STDs is given in this section for the purpose of information. For early syphilis, chancroid and uncomplicated gonococcal urethritis epidemiologically successful single dose treatment regimens i e. the drug schedules which are effective in 95 percent or above cases are mentioned Other STDs which are of chronic nature, like, gonococcal/nongonococcal urethritis of long duration, i.e., more than 7 days, pelvic inflammatory disease and ulcerative STDs, viz., donovanosis and lymphogranuloma venereum require an intensive and longer duration of treatment.

It is always appropriate to consult the doctor at the earliest occurrence of symptoms and adhere to the treatment and follow-up guidelines given by him. The treatment of sexual partner is a must in all the STDs, to prevent the reinfection of the individual receiving treatment; complications in the infected sexual partner and also to check the spread of STDs in the community.

Single-dose treatment guidelines

A. ***Early Syphilis*** : This includes primary, secondary and latent syphilis of not more than two years duration.

Treatment

Injection Benzathine penicillin 24 lac units in a single dose by deep intramuscular injection on buttocks.

The preparations available in the Indian market are:

Penidure LA 24 (Wyeth)
Longacillin LA - 12 (2 vials) - Hindustan Antibiotics

The approximate cost of treatment is Rs. 20/-

The cases allergic to penicillin will need alternative broad-spectrum antibiotics as follows:

1. Tetracycline hydrochloride 500 mg four times a day for 15 days by oral route. Some common commercially available brands are

   Idilin, 250 mg (IDPL)
   Resteclin, 250 mg (Sarabhai)
   Hostacycline, 250 mg (Hoechst)
   Alcyclin, 250 mg (Alembic)
   Total cost of treatment is approx. Rs. 120/-

   OR

2 Erythromycin tablets, orally 500 mg four times a day for 15 days. Some available Indian brands are

   Erythrocin 250 mg (Abbott)
   Althrocin 250 mg (Alembic)
   Emycin 250 mg (Themis)
   Erysafe 250 mg (USV)
   Total cost of treatment is approx Rs 400/-

Erythromycin is the drug of choice in penicillin-sensitive pregnant mothers.

B Chancroid

Injection Ceftriaxone, 250 mg intramuscular in one sitting
Available brands in Indian market are
   Monocef, 250 mg (Lyka)
   Nosocef, 250 mg (Merind)
   Torocef, 250 mg (Torrent)
   Cost of single injection is approx Rs. 60/-

C. Uncomplicated Gonorrhoea

Injection Ceftiaxone 250 mg intramuscular in one sitting

OR

Amoxycillin capsule 3.5 Gorally, preceded by Tab. Probenecid G orally in a single dose half an hour before Capsule Amoxycillin are given. Available brands in Indian market are:

Amosul (German Remedies)

Amoxivan (Khandelwal)

Mox (Gufic) and Amoxibid (Biddle-Sawyer).

Probenecid is available in the market as Benemid

Total cost of both the drugs works out to approx. Rs. 60/-.

Diseases of prolonged duration or of a chronic nature are treated with a course of antibiotics as follows·

I. Complicated Gonorrhoea

Initial treatment is the same as that for uncomplicated gonorrhoea. This should be followed by.

Doxycycline, 100 mg twice a day by the oral route for 10 days or till symptoms completely subside.

Some brands of doxycycline available in the Indian market are.

Lydox	100 mg (Lyka)
Biodoxy	100 mg (Biochem)
Doxy-1	100 mg (USV)
Doxypal	100 mg (Jagson Pal)

Total cost is approx. Rs. 100/-.

II. Donovanosis

i) Co-trimoxazole 2 tablets twice a day by the oral route for 14

days. The strength of Trimethoprim 80 mg and Sulphamethoxazole 400 mg in each tablet

Commonly available brands in Indian market are:

Bactrim	(Roche)
Septran	(Burroughs-Wellcome)
Oriprim	(Cadila)
Synastat	(Roussel)

Total cost of treatment is approx Rs 50/-

OR

ii) Tetracycline hydrochloride 500 mg four times a day for 15 days given orally

III Lymphogranuloma Venereum

Doxycycline, 100 mg twice a day by the oral route for 15 days.

IV Late symptomatic and latent syphilis

This includes latent and late syphilis of more than 2 years duration or of an indeterminate period

Recommended line of treatment is Benzathine penicillin Injection 24 lac units in a single dose by the intramuscular route once a week for 3 weeks

Total cost of treatment for late syphilis is approx Rs. 60/-

GLOSSARY

Abortion: Expulsion of a baby before 28 weeks of pregnancy. It may be spontaneous or caused by artificial methods.

Aneurysm: Local dilatation of a blood vessel wall, usually a major artery like Aorta due to a local fault in the wall. Sometimes seen in late stage of syphilis.

Ano-rectal region: Region including the lower end of the food canal called rectum and anus from where faeces is excreted

Balanitis Xerotica: A condition in which the glans penis is shrivelled, white and glassy leading to inability to retract the prepuce. In extreme cases it may involve the urinary passage and is then termed as *balanitis xerotica obliterans.*

Bisexual: A person having sexual relation with persons of both sexes, being both heterosexual and homosexual.

Candidial vaginitis: Infection of the vagina caused by a yeast which can lead to itching and white discharge Sometimes this is seen in diabetic individuals.

Cerebrospinal fluid (CSF): Fluid around the brain and spinal cord in which the organs remain bathed and which acts as a shock-absorber.

Cervix: Neck of the uterus opening into the vagina.

Clitoris: Small erectile organ of the female genitalia situated at the junction in front of the labia minora. A counterpart of the penis in males.

Congenital: Abnormalities of the body or organs existing from birth or before birth. They can be either due to genetic diseases or caused by certain drugs and infections during pregnancy or spontaneously.

Cryosurgery: Surgery done by the application of intense cold to cause destruction of tissues by rapid freezing. Substances used are:

Carbon dioxide (-79 °C)
Nitrous Oxide (-89°C)
Liquid Nitrogen (-196°C)

Cryptococcosis: *Cryptococcus neoformans* causes deep fungal infection. In HIV infected individuals it acts as an opportunistic infection The common features due to involvement of brain and its covering membranes are fatigue, weight loss, headache, nausea and stiffness of neck. The organisms may also spread to lungs, kidneys, skin, fundus of eye and other organs producing symptoms in them.

Dark-field Microscope: used for identification of germs causing syphilis. The background is dark and the mobile organisms are seen brightly moving in it.

Direct Microscopy: Magnified view of tissue cells under the microscope

ELISA Test: Blood test to detect the presence of HIV and other diseases. In HIV it becomes positive 6 weeks after infection but it is not confirmatory and a positive test has to be further confirmed by the Western Blot test.

Epithelium (Columnar, Ciliated Columnar, Stratified Squamous): The surface layer of cells covering the skin and mucous serous membranes. It varies according to the structure it covers e.g., on the skin it is stratified squamous epithelium; on the mucous membranes it is columnar, on the respiratory mucous membranes it is ciliated columnar epithelium.

Fallopian tubes: Tubes which carry the ovum from the ovary to the womb. Fertilization of the ovum and sperm takes place here.

Fistula: It is an abnormal passage from the skin to an internal organ

Fixed drug eruption: Dark greyish blue round, patches on the skin or mucous membrane caused by an allergy to medicines like sulfa, aspirin etc It occurs in a fixed place every time the person takes the offending drug.

Foetus: Baby in the womb after 8 weeks of pregnancy when it can be identified as human Before 8 weeks it is called embryo

Genitals: Sexual organs In males it includes penis, scrotum and scrotuma and its contents In females, vulva including the labia majora and labia minora and clitoris

Heterosexual: A person having sexual relations with a person of the opposite sex

Homosexual: A person having sexual relations with a person of the same sex

Impotence: It literally means want of strength or power The word is considered derogatory and therefore scientists now prefer to use the terms like, erectile dysfunction, erectile problems and impaired erection In about 50 per cent of males this has functional basis.

Index patient: The patient of STD who reports voluntarily or is referred to the clinic by the family practitioners or anybody else is termed as Index patient.

Infant: A baby upto the age of one year.

Infertility: Inability to bear a child. This could be due to disease in the female caused by inadequate ovum production, blockage of the

tubes, infection in the uterus etc In the males it can be due to inadequate or faulty sperm production due to diseases of the testis or blockage of the vas

Kala-azar: Infectious disease caused by a parasite, *Leishmania donovani* causing fever and enlargement of the liver and spleen It can cause darkening of the skin hence it is called Kala-azar Common in Bihar and West Bengal

Kaposi's Sarcoma: A cancer mainly affecting the skin but can involve other tissues Appears as raddish blue to purple spots generally on the feet and legs Common in Central Europe and Central Africa Now commonly seen in patients suffering from AIDS

Laser: Stands for Light Amplification by Stimulated Emission of Radiation Intense heat is generated with this light of monochromatic wavelength which destroys tissue The advantage is that tissue destruction is localised with sparing of surrounding normal tissue

Lesions: Pathological changes caused in bodily tissue due to disease

Lichen Planus: Disease of the skin or mucous membrane showing violet coloured lesion on the skin and white lace-like pattern on the mucous membrane It is itchy and commonly seen on the arms, legs and lower back

Malignant: They are cancers which may be present locally or may spread distantly away from the initial site causing multiple organ involvement and can even cause death

Mycobacterial infections: Infections caused by certain group of bacteria called mycobacteria The cause diseases like tuberculosis, leprosy etc

Newborn: Also called newnate A newly born baby upto one month of age

Ophthalmia neonatorum: Inflammation of the eye of the newborn caused by a bacteria, gonococcus, acquired while the baby passes through the infected birth canal of the mother suffering from gonorrohea, during birth.

Papanicolau (PAP) Smear: Smear made from vaginal and cervical secretions and seen under the microscope to look for cancer, infection and type of cells.

Plaque: Raised or depressed flat lesion wider in diameter than depth

Pornography: Literature in the form of books or films describing or showing sexual acts in order to cause sexual excitement.

Post-partum: The period of one month after delivery.

Psoriasis: Disease of the skin showing red lesions with silvery white scales commonly seen on the scalp, back, elbows and knees It often increases in winter and can be associated with joint involvement

Retrovirus: Viruses belonging to family *retroviridae Rretro* means 'back', 'in reverse direction' They are RNA viruses, but are able to convert RNA into DNA through a unique enzyme, reverse transcriptase, a RNA-dependent DNA polymerase

Sterility: Inability to conceive a child It may be due to disease in the male or female. It is an absolute term and the preferred terminology is infertility

Still-birth: Birth of a viable baby after 28 weeks of pregnancy which shows no signs of life like breathing or movement

Street Walkers: Commercial sex workers or prostitutes who solicit sexual clients on the streets

Trachoma: Infection of the eye involving the conjunctiva and cornea caused by a bacteria which can lead to pain, watering and redness of the eye. Long standing cases can lead to blindness.

Trichomonas vaginalis vaginitis: Infection of the vagina caused by a parasite which can lead to itching and thin white foul smelling discharge

Urethra: Urinary passage from the bladder to the outside opening through which urine is passed In females it is short, approximately 4 cms. while in males it is long and divided into anterior and posterior urethra.

Uterus: In layman's language it is called womb in which a baby grows before birth

Vagina: Passage extending from the cervix to the vulva Infection leads to vaginitis causing white discharge.

LIST OF ILLUSTRATIONS AND TABLES

	Page
Fig 1. Reported STDs are like a tip of an iceberg over the water surface	27
Fig. 2. Cut and longitudinal section of penis	31
Fig 3· Male sexual organs	32
Fig 4 Epithetial surfaces of genito-urinary system	33
Fig 5 Neural control of male sexual response	36
Fig 6a & 6b Female sex organs	37
Fig 7 Uterus, fallopian tubes and ovaries	39
Fig 8 Neural control of female sexual response	40
Fig 9 Treponema pollidiam, Causative organism of syphilis	43
Fig 10 Primary sore of syphilis	47
Fig 11 Erythematous raised lesions of secondary syphilis	47
Fig 12 Aneurysm of aorta in tertiatry syphilis	48
Fig 13 Haemophillus ducreyie Causative organism of chancroid	48
Fig 14 Ulcers of chancroid	52
Fig 15 Ulcers of donovanosis	52
Fig 16 Donovan bodies Causative organism of donovanosis	55
Fig 17 Elephantiasis of fenale genital organs in LGV	55
Fig 18 Tiny vesicular lesions on shaft penis in a case of herpes genitalis	62
Fig 19 Discharge at the tip of male urethra in a case of gonorrhoea	62
Fig 20 Gram negative diplococci in Pus cells Causative organism of gonnorohoea	64
Fig 21. Trichomonas vaginalis	65
Fig 22 Ano - rectal region	70
Fig 23 Mite of scabies (Sarcoptes Scabiei)	72
Fig. 24 Scabies Genital lesion	77
Fig. 25 Genital warts	77

Fig. 26: Molluscum contagiosum 78

Fig 27. Body louse and pubic louse 79

Fig. 28: Global distribution of HIV diseases 84

Fig. 29: WHO projection of HIV cases on various countries 85

Fig. 30: HIV Virus: Schematic presentation 87

Fig. 31· Routes of entry of HIV 88

Fig 32· Window period and HIV antibodies 90

Fig 33 T4 Cell Counts and HIV/AIDS 91

Fig 34 Squeeze technique 109

Fig 35 Correct method of condom use and disposal 119

Fig 36· Showing path of rays through the condenser in a dark ground microscope 129

TABLES

Table 1	Sexually transmitted pathogens various clinical manifestations	Page 22
Table 2	AIDS and HIV Infections in South East Asian Region (SEAR) Countries as of 1st January 1996	Page 83
Table 3	Pshychological factors on which sucessful sexual intercourse depends	Page 100

INDEX

AIDS, 58, 69, 70, 82, 91, 95, 96, 97, 112
Amoebic, 25, 42
Androgen, 101
Antibodies, 89
Ano-genital warts, 69, 75
Aorta, 49

Bacilli of Donderlein, 39
Bacterial vaginosis, 71, 128, 134
Balanitis, 25, 59, 157,
Bangladeshi syndrome, 105
Bartholin's gland, 37, 38, 41
Bhava Prakasha, 19
Biblical texts, 19
Blood supply, 34, 49
Bone, 46
Brain, 49

Cardiovascular, 50
Calymmatobacterium
  granulomatis, 134
Candida, 25
  albicans, 59, 69, 129
  vaginalis, 64
Cerebrospinal fluid, 57
Cervix, 38, 56, 66
Chancroid, 20, 21, 42, 51, 57, 134, 139
Coccobacilli, 128
Colitis, 71
Colposcope, 76
Columnar epithelium, 34, 38, 39
Condom, 119, 124, 125
Corpora cavernosum, 30, 34, 36
Cowper's gland, 31, 38
Cremaster muscle, 34, 35
Coronal sulcus, 44
Corpora spongiosum, 31, 34, 40
Cryosurgery, 76
Cytomegalo virus, 70

Dark field microscopy, 129
Dhat syndrome, 105
Diabetes mellitus, 68
Donovanosis, 20, 21, 42, 53, 56, 57,
  69, 134, 135, 140
Dorsal artery, 34
Dyspareunia, 110

Ejaculatory duct, 34
Electro surgery, 76, 93
Elisa test, 93
Endocrinal, 68
Epididymes, 34
Erectile tissue, 36

Fallopian tube, 39
Female sex organs, 37
Feranga roga, 19
Fourchette, 38, 43, 44, 56
Frenulum, 44, 51, 56
Fundus, 39

Garmi ki bimari, 21
Geisma staining, 135
Genital ulcers, 42
Genito-anal, 27
Genitalia, 35
Genito-urinary medicine, 21
Glans penis, 30, 56
Gonococcal urethritis, 66, 67
Gonorrhoea, 20, 21, 63, 67, 69, 112,
  133, 140
Gram staining, 133, 134
Gram positive bacillus, 39
Granuloma
  inguinale, 53
  venereum, 53
Groove sign, 56

Health education, 120
Heart, 49
Helper T cells, 82
Hemophilus ducreyi, 51
Hepatitis, 25
Herpes
genitalis, 25, 58, 113, 135
simplex, 70
Human Immuno defeciency syndrome
(HIV), 26, 58, 82, 83, 85, 86, 92, 95, 97, 112, 114
HIV test, 123
HIV antibody, 115
Human papilloma virus (HPV), 75

Interstilial cells, 34
Ischiocavernosus, 32

Kam pareshta, 21
Kaposi sarcoma, 70

Labia majora, 37, 38
Labia minora, 37, 38, 40
Laser therapy 76
Leucorrhoea, 61, 113
Lymph node, 54, 58
Leukocyte, 128
Leydug cells, 34
Lympho granuloma vanereum (LGV), 21, 25, 42, 56, 57, 69, 141

Male sex organs, 31
Masters & Johnson technique, 104
Medico social disorder, 20
Membranous urethra, 31
Minor STD's, 21
Molluscum contagiosum, 76, 78
Mons pubic, 37

National AIDS control organisation (NACO), 86
Neisseria gonorrhoeae, 63, 64, 133
Nerve supply, 35
Non gonococcal infection, 69
Non gonococal urethritis, 25, 56, 63, 112
Non venereal ulcers, 42, 60
Non treponemal test for STD, 131

Ophthalmia neonotorum, 66
Opportunistic infection, 91
Oral genital practice of, 27
Ovaries, 39

Para sympathetic system, 35, 102
Paraurethral duct, 31
Paraurethral gland, 38
Pediculosis pubic, 78
Pelvic bones, 30, 34,
Pelvic peritonitis, 66
Pelvic inflamattory disease (PID), 68
Penis, 30, 35, 59
Persistent generalised lympho-denopathy (PGL), 90
Phthirus pubis, 79
Physiological response, 35, 39
Pneumocystis carsini, 82
Preemptive measures, 28
Prepuce, 30, 38, 53
Proctitis, 71
Prostrate gland, 31
Prostrate urethra, 31
Protozoa, 25, 42, 71
Pseudoelephantiasis, 54
Psychic response, 35
Psychological factor, 100
Psychosexual, 58, 99, 103, 110
Pubic lice infection, 25, 72, 78
Pudendal artery, 34
Pudendal nerve, 35, 103
Pyogenic organisms, 39, 74

Rapid plasma reagent card test (RPR test), 132
Ratija roga, 21
Rectal mucosa, 118
Rectum, 34, 66
Reflective response, 35
Retroviridae, 86
Reverse transcriptase, 86, 94

Salmonella, 25
Sanskrit texts, 19
Sarcoptes scabiei ver hominis, 73
Scabies mite, 25, 72
Scrotal skin, 34
Sexual response, 102
Sexual transmission, 44
Sexually transmitted disease pathogen, 22
Scrotum, 34, 54, 56, 73
Seminal vesicles, 34
Shigella, 25
Skene's gland, 38,
Skin, 46
Sore hard, 44
Sore soft, 51, 54, 118
Spermatozoa, 34
Spinal cord, 35, 49
Squamous epithelium, 38, 39
STD control, 25, 117
STD clasical, 21
Swapna dosha, 106
Sympathetic system, 35
Syphilis, 20, 21, 42, 43, 45, 49, 50, 57, 69, 106, 112, 131, 133
cardiovascular, 50
cogenital, 42, 50
maligna, 45
primary 43, 44, 138
secondary 44
tertiary, 45, 50, 141
Systolic reaction, 36, 101

Testosterone, 34, 101
Testes, 34, 35
Transsexual, 109
Transvestitis, 109
Treponema pallidium, 43, 129, 130
treponomal test for STD, 131
Trichomoniasis, 25, 128
Trichomonas vaginalis, 59, 64, 67
Tubular cells, 34

Ulcer, 42
genital, 42
syphilitic, 44
Ulcerative STD's, 42
Urethra, 31, 38
Urogenital organs, 30, 61, 65, 66
Uterus 39

Vascongestion, 35, 39
Vas deferens, 34, 103
Vasodilation, 102
Vagina 38, 64, 40
Vaginal mucosa, 38, 118
Vaginismus, 110
Venereal disease, 21
Venereal warts, 75
Venus plexus, 40
Vestibule, 37
Venerophobia, 111
Venereal disease (VDRL), 45, 51, 131, 132
Vulva, 37, 56, 58, 159
Vulvitis, 57, 59

Wart tissues, 25
Wart viruses, 69
Wet mounts, 128
Window period, 89

Zidovudine 94